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ABSTRACT

A survey of recent trends in geographic education, this book contains a series of papers by West German experts in the field, and is intended to provide for the international community of geographical educators an account of the state of the art in their country. The seven papers are: (1) "Handbooks for the Teaching of Geography" (H. Hendinger); (2) "The Geography Curriculum in the Federal Republic of Germany after the Reform Circa 1970" (H. Kock); (3) "Recent Changes in Systematic and Regional Geography in West German Schools" (H. Closs); (4) "Media in Geography Teaching" (G. Meier-Hilbert); (5) "Developments in the Teaching of Geography Lessons" (D. Bohn); (6) "Geographical Textbooks and Atlases as Mirrors of Curriculum Development in the Federal Republic of Germany" (H. Volkmann); and (7) "A Review of Research Activities in Geographical Education in the Federal Republic of Germany 1975-1984" (J. Birkenhauer). (DB)

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GERMAN DIDACTICS OF GEOGRAPHY IN THE SEVENTIES AND EIGHTIES. A REVIEW OF TRENDS AND ENDEAVOURS

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HISTORY AND DEVEL-
OPMENT RELATIONS
BETWEEN UNIVERSITY AND
SCHOOL GEOGRAPHY
VALUE OF GEOGRAPHY
AS A SUBJECT IN SCHOOL
BALANCE OF SYSTEM-
ATIC AND REGIONAL
GEOGRAPHY TEACH-
ING METHODS RELATIONS
BETWEEN THEORY AND
PRACTICE FORMS OF
TEACHING SYLLABI,
CURRICULA TREAT-
MENT OF MEDIA

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EDITED BY JOSEF BIRKENHAUER AND BILL MARSDEN

INTERNATIONAL GEOGRAPHICAL UNION
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GERMAN DIDACTICS OF GEOGRAPHY IN THE SEVENTIES AND EIGHTIES. A REVIEW OF TRENDS AND ENDEAVOURS

EDITED BY JOSEF BIRKENHAUER AND BILL MARSDEN

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Preface

The idea that it would be useful for the IGU Commission on Geographical Education to promote a survey of developments in geographical education in the FRG emerged at its symposium in Freiburg in 1984. I was very pleased to respond to a suggestion that Joe Birkenhauer and I should coedit a selection of invited papers from West German experts in the field to provide for the international community of geographical educationists an account of the state af the art in their country.

My involvement is for me pleasureable in the first place because I have enjoyed so much the international contacts generated by working with the IGU Commission from my initial visit to the Congress in Leningrad/Moscow in 1976, and in editing two previous IGU sponsored volumes, on historical perspectives and teacher education respectively.

Secondly, I have had long and rewarding contacts with German geographers and geographical educationists, beginning with Robert Geipel in Munich, to whom I am indebted for initiating me not only into German geographical education, but also into the geography of education, followed by Peter Meusburger (then at Innsbruck, now at Heidelberg), Hans Barth in Hamburg, Hans-Martin Cloß (then at Trier), Hartwig Haubrich and others at Freiburg, and now Joe Birkenhauer.

I also owe a debt to the West German academic exchange organisation, DAAD, which enabled me to make two visits to the FRG in 1978 to study the RCFP, meeting people associated with that innovative project, in Munich in particular, and also Hannover and Hamburg, and led to two articles in British journals. I have also been delighted to meet and entertain some of these colleagues over in England. A number have sent valuable articles, and copies of textbooks and atlases. I might say that in writing school texts of my own I have found these, and especially the Diercke Weltatlas, the Seydlitz Weltatlas, the Harms Atlas and the Alexander Atlas invaluable sources of reference, which I have acknowledged.

These contacts have given me some inkling of what transpires in geographical education in the FRG and its own particular 'culture', and has added fascination to the receipt of the papers in this volume as they have been sent via Joe Birkenhauer for checking. The general procedure we have followed is that Joe Birkenhauer has taken the major responsibility, collecting and vetting the articles, and sending them on in an initial draft in English for me to try to render more idiomatic. I have tried to retain the characteristic flavour of the writings, however, and have not attempted to translate them into a smooth but impersonal English. Joe Birkenhauer has seen the book 'through the press' with financial help from the IGU. In this respect we are particularly grateful for Joe Stoltman's characteristic encouragement and substantive support. In turn I strongly recommend this volume to members of the IGU Commission on Geographical Education, and those attending the symposium in Brisbane in 1988, trusting they will see it receives the international dissemination it deserves.

W.E.Marsden
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German Editor's Foreword

It would seem useful for the reader not familiar with the FRG system to be acquainted with the terminology that forms the background of the different articles in this volume, particularly with respect to the following:

(1) the German Federal system
(2) the German school system
(3) some general terms used to describe activities in teaching geography.

(1) The Federal System

The Federal Republic of Germany is divided into "Länder" (plural of Land = country). These Länder autonomously exercise control over the school system and the curricula in schools. Thus, in spite of general opinions pertaining to the whole republic, each Land is free to do what it likes in all educational matters so long as certain formal standards are respected that are valid for the republic as a whole and agreed upon by the Standing Committee selected for the solution of such questions by the Länder. Thus, one Land, as a result of the more conservative majority in its parlament, may have retained geography as a subject of its own, whereas another one, reflecting the more social democratic majority, may provide courses for "integrated studies", "social studies" or "political studies", comprising history, sociology, political science and geography. At the moment the trend even in the "progressive" Länder is, however, back to single subjects. Within each Land curricula are formulated by commissions selected by the Ministry responsible for school affairs. The Ministry is entitled by the Landes-Parlament to provide guide-lines for the commissions, deciding on the more general content of a syllabus with stress, for instance, on systematic geography or on a more regional content. At the moment, there is a strong trend back to more regional geography, especially in the Länder with a conservative majority.

(2) The School System

The system is a four-tier one, consisting of

Primary School	grades 1 - 4, ages 6 - 9
Hauptschule	grades 5 - 9 or 10, ages 10 - 15 or 16, qualifying for all less-skilled jobs (equivalent to the old Secondary Modern Schools of early post-war England)
Realschule	grades 5 - 10 (or 7 - 10) qualifying for non-academic jobs
Gymnasium	grades 5 - 13, ages 10 - 18 qualifying for university level (equivalent to the old Grammar Schools in England, including A-level, or minor college level in the USA)

Apart from this four-tier system some of the Länder favour comprehensive schools (Gesamtschule) especially the Länder with a social democratic majority of long standing (Hamburg, Bremen). Some Länder practise both systems leaving it to parents which type of school they would favour. Some Länder have virtually no comprehensive schools at all.

(3) Teaching Geography

In schools, our subject is not called "geography", but "Erdkunde" (=knowledge of the earth), because it is not the same as university geography but comprises subject-matter of other earth sciences as well.

A student who aims at qualifying as a teacher of "Erdkunde" is obliged to study both geography as a science and what is called "didactics of geography", a term that has been found useful and has therefore been gradually and widely accepted in the Federal Republic since circa 1970. A woman or man dealing with the "didactics of geography" is a "didactician", chairs for such "didacticians of geography" have been installed since the 1970s in nearly every German university. "Didactics" (or "didactician") in German does not bear a negative image as in English, where it is equated with a formal and rather prescriptive instruction. On the contrary, a student would be expressly advised how to avoid the pitfalls occurring in actual teaching which stem from over-formal prescriptions. The term has been found useful moreover because it subsumes (rather than divides) everything that is needed in teaching a subject successfully (the Greek word "didactein" meaning "to teach"), i.e.

- some knowledge of pedagogy (educational objectives, their foundations etc.)
- some knowledge of psychology (motivation, development of children, learning)
- some knowledge of teaching (principles, forms, games, tests etc.)

in so far as this knowledge is helpful towards thoroughly understanding what happens while teaching geography.
On the whole the prevailing feeling is, almost as a matter-of-course, that teaching is not an art (that should be practised only by those who are especially gifted) but something in which guiding principles (as everywhere in the intellectual field) can be worked out, rationally and emotionally justified and applied in a process of learning and understanding.

Since the terms used in English - i.e. "geographical education" or "geography in education" - do not really mean the same, are not over-arching in the same way and are, moreover, perhaps a little unwieldy, one might propose (- for want of a better term -), to use "didactics of geography" in English as well though until it will be accepted there may be some initial reluctance to make such a change.

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Helmtraut Hendinger

Handbooks for the teaching of geography

0. Aims, content and general lay-out of this paper

In this paper I am going to deal with handbooks for the teaching of geography which have been written by the following eight authors and editors, or groups of authors respectively all of them published within the period under consideration in this book:

(i) Ludwig Bauer (1976)
(ii) Josef Birkenhauer (1971, 1980^{5})
(iii) Helmut Ebinger (1971, 1979^{3})
(iv) Hartwig Haubrich and co-authors (1977, 1984^{3})
(v) Lothar Jander and co-authors ("Metzler Handbuch") (1982)
(vi) Helmut Köck and co-authors (1986)
(vii) Gustav Kreuzer and co-authors (1980)
(viii) Alois Schmidt (1965, 1976 ^{5})

In considering these books I shall proceed along the following lines. First I will provide a general characterisation of what the main intentions of the different books are, and then go on to deal with them in a more detailed way under particular headings so that a comparative view of the handbooks may be a useful outcome for the reader. The headings chosen are the following:

(A) History and developments
(B) Relations between university geography and school geography, or the didactics of geography respectively
(C) Relations between university geography and school geography, or didactics of geography respectively
(D) Reflections on the value of geography as a subject in school
(E) Relations between theory and practice
(F) Balance of systematic and regional geography
(G) Importance of teaching methods
(H) Scientific orientation of teaching
(I) Forms of teaching
(K) Succession and choice of subject-matter on different school levels and in different school types
(L) Syllabi, curricula
(M) Treatment of media

1. General characterisation

BAUER sees his book as being a critical overview of what has to be learnt, why it is to be learnt and how. In doing so he specifically deals with the requirements of age, with systematic versus regional geography and particularly with teaching methods, ways of learning and the ways of measuring the results of learning. Bauer expressly wants to further the reform of educational objectives, subject-matter and teaching methods as a permanent curricular process with a special stress on methodological questions and the research methods of geography as a university subject.

BIRKENHAUER is orientated to a more or less pragmatic view, wishing to help towards the practical improvement of teaching geography. Therefore, he usually desists from historical reflections considering these only where they are necessary for the understanding of what goes on today. Similarly and for the same reasons, he is more concerned with psychological and didactic questions as such than with any philosophical background. He expressly wants to further an understanding of what really can be done in lessons and how teaching methods and insights can be improved. Therefore he deals widely with teaching activities, the organisation of lessons and the use of media. In doing so he does not neglect however the difference between school and university approaches to the subject. Both teaching and the training of teachers must be based on scientific standard.

EBINGER, in his 'introduction', is particularly concerned with laying a base for a deeper understanding of what the teaching process in geography is fundamentally about - with a strong attempt to put teaching on sound principles, scientifically ascertained, also by interlacing geographical and educational sciences. He wants to prove both to students and teachers that such enlightened knowledge will serve as a true help towards a better preparation of actual teaching, and, indeed, such knowledge being the only guarantee for a reasonable base for an examination of what is happening in one's lesson. This does not mean to say that EBINGER offers no direct help for the preparation of lessons or even recipes for teaching. But he is rather more concerned with reflecting teaching against the background of educational theories.

The next handbook or, better, manual, generally known under the name of **HAUBRICH**, was prepared by six authors. They aimed at a wellordered systematic survey of present basic knowledge in the didactics of geography thus helping different groups of users to find quick information, page after page illustrated by instructive examples from practice. Each chapter is rounded off by questions and answers and by hosts of references. These are meant as gateways to broader and deeper knowledge. The first chapter on objectives is followed by another one on the construction of a curriculum. It is particularly meant for the furthering of discussions of trends in modern didactics. At the same time it mirrors the development of the didactics of geography through the seventies. The status of geography within the field of social studies is critically discussed by Richter. After the introduction of social studies as a subject into the syllabi of the Länder in the sixties and seventies two models of integration developed: the one of complete integration of geography within a completely new curriculum, the other by way of co-operation, albeit with substantially independent subjects, each of them certainly being part of social studies, but nevertheless with integrating faculties of their own, the latter trait especially applying to geography. Examples for comprehensive schools and advanced level studies are given in the manual. The difficulties arising are critically pointed out, stemming from the complete merging of subjects.

Psychological aspects are only briefly dealt with, presumably because the authors felt that they could not draw on reliable research results. Primarily concerned with practical advice, the manual refers only broadly to the connections between geography at school and at university level. Instead, it stresses forms and ways of teaching, media, effective control of pupils' learning, planning and analysing lessons. Because of the manual's 'brick-bybrick' structure, all elements of teaching are given prominence, making cohesion between the sub-chapters somewhat difficult. In case one should want to widen and deepen one's knowledge one has to go to the other handbooks. However, the extensive list at the back of the volume, with its many catch-words and concepts, makes quick comparison possible.

The next handbook is usually cited in Germany as the 'Metzger Handbuch'. For convenience it is here refered to as **JANDER et al**, after the editor who comes first in the alphabet. Altogether 26 authors have contributed to the making of this manual. It has quite a distinctive encyclopedic nature, with the articles arranged in alphabetical order. The chapters deal with different theoretic and didactic notions and concepts from both university and school geography. The authors are convinced that the subject in school has to be regarded as an interdisciplinary part of political education. Therefore social contrasts in intertests and needs as well as socio-spatial conflicts gain prominence, and again within these, as the editors explain, stress is laid on the following educational aims: emancipation, ability to act and learn on one's own, interdisciplinary co-operation and the like. These aims make themselves felt in the articles on agrarian problems, population and mobility, city, land use, natural and social catastrophes, problems of resources and ecology, spatial disparities, oriental capitalism, segregation, urban problems, and tourism. By choosing expressly these themes of politically high importance and highly explosive nature, the editors and authors certainly wish to underline their conception of school geography as part of political education. Similarly, the orientation of examples given on complex learning and every day situations is no empty formula for the authors, but a consistent way of thinking, practised again and again with many useful hints for students and teachers.

The handbook by **KÖCK** is published as volume I of a series of handbooks designed for the purpose of giving teachers the foundations for all systematic aspects of the subject both at university and at school level. Volume I is dedicated to the foundation in school. One third of the book systematically tries to lay the foundations, at first for geography as ascience (introducing it as a science, methodological questions) - this part written by LESER and HANTSCHEL after an introduction to the whole volume by KÖCK - , and secondly for the implications of teaching (pedagogics, psychology, and general didactics) - this part written by BIRKENHAUER. Köck as the general editor, science-centred as he is, makes it clear in his own part on 'objectives and subject-matter' that the essential tasks of the subject in school have to be guided by the chorological paradigm of university geography and equivalent positions for spatial behaviour, particularly based on systematic geography. It is not so much from primarily pedagogical decisions (as for instance with Ebinger: see above) that school geography asks what geography as a science may offer for decisions on the curriculum. In the succeeding part by BIRKENHAUER, however, this author tries to build a bridge between science on the one hand and the pupils and their needs and interests on the other. He shows, with the help of examples, how pedagogical intentions can and must be made use of in school.

The second part of the volume, taking up altogether one quarter of the pages, is again written by KÖCK. He deals with the relation of objectives and content. To him the prime objective on which all geography teaching is really pivoted is the 'competence of spatial behaviour '. Therefore it is the guiding principle for every part of the geography curriculum throughout school. In order to convey this aim to pupils KÖCK judges systematic geography as being best suited (because of its model-building capacity and training of thinking in patterns). It therefore gains a heavy curricular preference over regional geography. Since models, according to KÖCK, as images of theories and geographical reality, are mentally necessary for any effective learning, KÖCK sets out to outline models of curricular hierarchies based on objectives. Next he shows by what subject-matter these models and objectives can best be represented. The apparent contradictions between systematic and regional geography in this process are, according to KÖCK, no problem at all and can be solved, if one bears in mind that the regional approach is nothing but a secondary approach, comparable to other similar ones (e.g. geo-ecology, social and political geography).

The third chapter in the volume, written by THEISSEN, deals with the practice of teaching. THEISSEN presents a variety of procedures and proposals for teaching,centering on how the necessary contact between pupil and matter can best be achieved, in direct and in indirect ways. In connection with teaching principles and topics, where an interdisciplinary approach seems to be advisable, this aspect is also dealt with, therein discussing the demands for such 'trans-subject' teaching as well as the difficulties. The last chapter of the book is by BIRKENHAUER again: how to plan lessons effectively and to control their results are its aims.

KREUZER's book consists of nineteen chapters written by nine authors. Though this variety certainly enriches the book it naturally leads partly to overlapping and partly to controversial opinions. Thus readers mostly have to do their own grinding down. Within social studies, geography is to be seen as the central subject and core, integrating all spatial and earth science aspects, both in lessons and in projects (KREUZER). Great difficulties arise however for teachers and pupils alike when interdisciplinary projects are actually tried out in practice. In an introductory chapter BIRKENHAUER 'places' the didactics of geography between the educational and the geographical science, stressing that it is the educational aspects that really form the base for actual teaching and not geography as a science. Continuing, ENGELHARDT discusses the societal significance of geography, both at university and at school level. Other contributions are by the following authors. BARTELS describes the main position and trends of geography at university in the seventies; HENDINGER occupies herself with curriculum construction and with examining the objectives of the school subject; BIRKENHAUER deals with the psychological implications of geography teaching, as well as, in a later chapter, with problems of evaluation and tasks for research; KREUZER, BAYER and STROPPE (in several chapters) write about methods and the ways of planning lessons, themes and learning sequences; FICK surveys media and proposes a theory for ordering them; SPERLING gives an overview of school geography outside the Federal Republic.

More than with all other books that of **SCHMIDT** is based on extensive historical and philosophical reflections. These reflections make it thoroughly clear what the author's guidelines are leading to biased statements and criticisms, evidently not seeking for any compromise. Nevertheless, the book eventually supplies the reader with useful advice and ideas for what should be done in lessons and how this can be done in an optimal way. The student is made well aware of what happens in lessons by lists of well-aimed questions for the preparation of lessons and for an adequate judgment of their success after they have been given.

3. Special comparisons

In the following paragraphs I am attempting to show in which way and to what amount the headings listed in Part 0 (A to M) are considered and evaluated in the different books.

In these comparative paragraphs I shall use a summary style of presentation wherever possible.

A. Consideration of historical dimensions

BAUER: Roots of curricular reforms in the seventies (philosophy, history of science etc.); no earlier traditions

BIRKENHAUER: Concerned with the present; references to former positions rare (changes in subject-matter and methods)

EBINGER: Deeper understanding of present-day trends by putting them into their historical contexts and stages of didactic development; references to the sources of ideas in school geography

HAUBRICH et al.: On the whole, dealing pragmatically with modern trends. No substantial reflections on the development of ideas and trends, with three exceptions:When dealing with the principle of concentric approaches VARENIUS (1650) and

PESTALOZZI (1801) are cited. Examples of older syllabi give an idea of development in different epochs. The exemplary principle is shown within its historical roots.

JANDER et al.: Because of the book's objective of improvement of future geography no flash-backs on historical trends etc. before 1970: substitution of such reflections by the critical approach

KÖCK et al.: Theoretical background of geography with several historical reviews (LESER). School geography in Germany since the 16th cent.; influential theories in the 19th and 20th cent. as a context for present opinions about the socio-cultural role of school geography; dealing with epistemological questions (BIRKENHAUER).

KREUZER et al.: Sources of ideas and methods in school geography depicted in several chapters. Societal and political trends since the 18th cent. with respect to the value of geography for society and for political understanding, enabling the pupil to play his role as a competent citizen and in his attitude towards his environments (ENGELHARDT). Evolution of ideas about the purpose of geography, necessity of a pluralistic outlook (BARTELS). 'Modern' concepts and methods, principles etc. with their roots (18th cent., early 20th cent., 1950) (KREUZER, FICK)

SCHMIDT: Detailed history of school geography in Germany since the 16th cent. in the first chapter, historical reflections of roots and sources in all other chapters, special reference to developments since 1900: in science, philosophy, educational theories with respect to aims and choice of subject-matter in school geography. Stressing the multi-dimensionality of geographical objectives as a prevailing heritage

B. Relations between science and didactics of geography

BAUER: Tasks of didactics: (a) the structuring of the subject-matter as presented by university geography; (b) agent between science and societal needs; (c) agent between the structuring of the subject-matter and the learning structure of the pupils. Science and didactics as equal partners in the processes of teaching and learning

BIRKENHAUER: Advocating a balanced relation of didactics and science but with (typical of him) stress primarily on didactic needs (significance of controversies for the subject in school). Detailed systematic survey of basic geographical positions, yet always within the frame-work of their didactic relevance for school including specifically a consideration of educational and physiological principles.

EBINGER: Didactics of geography as part of educational studies, instead of geography; though the close relation between didactics and science of geographical didactics always abound to a critical survey of new developments in methods, results of research etc. with respect to the question whether they are useful in school. Development of methods and results; dependency on didactical considerations. Didactics not a kind of applied science (as SPERLING's opinion) but meriting a value of its own because of its justifying function for what is necessary in school geography

HAUBRICH et al.: Special catch-word ('science and geographical teaching'). Two main scientific approaches as useful for school: geo-ecology, social geography

JANDER et al.: No particular problem. Approach from social theory decisive for the choice of contents and aims and ultimately for the ways of teaching.

KÖCK et al.: Aiming at a balanced relation between didactics and science

KREUZER et al.: Detailed description of 'schools' and concepts in academic geography (BARTELS). Relevance of geographical positions to school (HENDINGER). On the whole the reader has to find his own way as a consequence of the book's general conception.

SCHMIDT: Preponderance of didactical issues and decisions on the subject-matter; relevance of historical and philosophical developments as decisive for judging learning processes

C. Relations between educational theories and school geography and didactics of geography

BAUER: Fundamentally concerned with how to make decisions on curriculum and objectives before applying them to geographical aims similar reflections on learning processes and the structuring of curriculum sequences.

BIRKENHAUER: Beginning his book with a detailed survey of the 'present-day controversies' in school geography he avoids a too vague and general discussion of the relations between theories and the didactics of the subject. Theories considered only in as much they enable us to find answers to open didactical questions, as many detailed parts in the book show (ethics, epistemology).

Psychological principles illuminated by many examples from school geography. Penetration of all chapters by what might be called BIRKENHAUER's fundamental didactical axiom: people (children) first - subject-matter second.

EBINGER: Utmost priority of educational and general didactic theories and models in deciding on the principles of didactics. These models (taken from humanism, kybernetics, general teaching analyses - not without a thorough dealing with their aims, trends, backgrounds) form the book's core. Didactics only thus to be founded as a full scientific discipline. Only then to be applied to questions of teaching and learning and curriculum research of any subject in school. Though the results and methods of geography itself are not to be dispensed with before they can form topics of school geography they have to be examined first whether they are suited as educational objectives.

HAUBRICH et al.: Though main intention is pragmatic teaching, the general education background is usually dealt with. Good example: the curricular theory of S. ROBINSOHN and its results for curriculum decisions in geography.

JANDER et al.: Though 'didactics' forms an article of its own, a very general coverage only combined with some criticism. No genuine approach under geographical angles, though under the heading 'social science' (relation to spatiality and other decisive didactical points of view).

KÖCK et al.: Educational positions prevalent today reviewed in detail in their substantial significance for school geography. Psychological foundations as essentials for the didactics of school geography (BIRKENHAUER).

KREUZER et al.: Dedication of the introductory chapter (BIRKENHAUER) to these relations. Identification of six prevailing 'schools' of educational and didactic theories in Germany. Outline of the main didactical questions and answers, these being: 'what' (subject-matter), 'why' (to what purpose), 'how' (teaching ways and methods). Complex context of decision-making agencies for school geography illustrated in a diagrammatic mode (society and politics, educational theories, didactical conclusions, geography and its paradigms). Some of these relations are specifically considered with respect to the formulation of a geographical curriculum (HENDINGER).

SCHMIDT: No systematic reflections of these relations though the foregoing decisions of the author make themselves felt in what he considers typical for school geography, of what should be done in lessons, and why and how. Many examples from actual teaching and lessons.

D. Justification of geography as a subject in school

BAUER: No priority discussion, though hinted at in several contexts (relevance of the subject for primary education and the role of geography within the field of social studies).

BIRKENHAUER: Review of positive and negative judgments by influential German educationalists and philosophers in the past and present; application to school geography: the value of the geographical approach in appraising mankind's needs and understanding of the world's variety and its complex range of problems. Insistence on the prominence of curricular principles over mere didactic ones; search for a balance between scientific geography and the needs of citizens (i.e. helping them towards a better understanding of their situational contexts and towards competent spatial behaviour). [Based on the conviction that all teaching should give priority to people instead of subject-matter]. Forceful coverage of ethical tasks of geography with respect to rational, reasonable responsible and careful spatial behaviour, political and cultural understanding, respect of religious differences etc. Trying to prove thereby the indispensibility of the subject in school.

EBINGER: One of his most central themes: the acquisition of important qualifications for many situations in life and world, in the present and in the future, through geography; value of the diverse processes of spatial thinking needed within the typical geographical approach. Particular stress on responsible spatial behaviour gained especially by a cultural-ecological approach, opening up a better understanding of peoples and their worlds

HAUBRICH et al.: Not especially emphasized, yet explicit discussion of geography's significance for society in order to legitimize the subject in school.

JANDER et al.: Not especially emphasized because the teaching of geography as part of political education makes it didactically relevant as a matter-of-course. Geography would gain an even higher effectiveness if it would be more (and necessarily) interdisciplinary.

KÖCK et al.: No particular stress on this aspect, perhaps because geography as a discipline is the unquestioned background of any competent spatial behaviour of the educated citizen, this spatial behaviour being the matter-of-course objective of all school geography.

KREUZER et al.: Dealt with in various ways within different chapters, each treatment serving as a suitable introduction (e.g. BIRKENHAUER: concrete examples for the significance of geography; ENGELHARDT: stress on its socio-political significance; HENDINGER: points of the discipline as relevant for spatial behaviour).

SCHMIDT: Necessity of geography as a subject in school a foregone conclusion; therefore not much discussion of critical views - or, if so, mostly one-sided arguments only; mere enumeration of opinions drawn from interviews and educational objectives.

E. Theory and practice

BAUER: Not expressly thematized, but useful advice and examples for lessons in systematic and regional geography with special emphasis on the relation of theory and practice.

BIRKENHAUER: Not expressly thematized, but dealt with intermittently in diverse chapters (i.e. controversies, didactic analysis, educational objectives, use of media, etc.), usually with emphasis on what should and could be done in lessons.

EBINGER: Educational and didactic theory as the necessary base for well-understood and (therefore) well-implemented practice - nevertheless practice seen as the necessary feedback for the improvement of theory and knowledge of what really goes on while teaching.

HAUBRICH et al: The very title of the handbook makes clear its intention: 'practical didactic' theoretical reflections therefore only offered within the context of practice. Explicite theoretical arguments on teaching contents and didactical concepts not included.

JANDER et al.: Undoubtable merit of this handbook throughout its chapters: the constant and critical reflection and juxtaposition of theory and practice. Theory not as an empty shell but within the practical context, thus achieving vividness even for the student. Best chapters those related to themes and contents of teaching with an explicit view on juxtaposing theory and practice.

KÖCK et al.: No explicit thematisation, though dealt with several times in the chapters on objectives and content within the frame of a syllabus: how to achieve a hierarchical ordering of objectives and therefore a sensible structuring of practice (KÖCK).

KREUZER et al.: Not dealt with explicitly, though taken up in many chapters with a view to improving teaching practice. Practical examples of how to bridge the gap between what is thought necessary from theoretical reasoning and what can actually be done in teaching.

SCHMIDT: Specific coverage under the heading 'empirical orientation'. Precedence of the concrete teaching situation, assisted by theoretical reflections.

F. Balance of systematic and regional geography

BAUER: Systematic geography more important than regional because of the opportunities for the training of geographical thinking, model building, forming of concepts and the like; regional geography however not to be fully dispensed with because of the high educational value of 'seeing things together'.

BIRKENHAUER: Pleads for thematic geography in the context of regionally aligned case studies, more or less following the principle 'from the near to the far' in a more or less concentric structure, though not along the strict route of former regional geography. Advancing psychologic reasons for such a procedure, together with a lot of examples (framed under a common denominator). Rejection of the schematic ordering of regional examples and advocacy of the 'dynamic' principle instead (i.e. orientation towards processes and problems).

EBINGER: Advocates a balance of systematic and regional geography: the former for scientific procedures, the latter giving priority to ecological questions and the application of general systems analysis, including environmental conditions of regional systems and cultural connections of people-environment-systems. In dealing with syllabi and how to order them in sequences he is critically open to the demands of systematic geography, though predisposed, on the whole, towards an exemplary regional geography.

HAUBRICH et al.: The concentric principle to be substituted by the exemplary principle, the latter leading on to the use of systematic geography as best suited to all 'exemplariness'. One gathers however from another sub-chapter (relation to geography as a science) that regional geography has a significant bearing within the curriculum. (The pronounced splitting-up of the contents in this handbook into many sub-chapters makes it difficult for the student to obtain a grasp of the inter-relations between the sub-chapters and to analyse them.)

JANDER et al.: Systematic versus regional geography not expressly dealt with. Under the heading 'systematic geography' the categories proposed by A. SCHULZE in 1970 for teaching geography systematically are assessed as being not very precise: the SCHULZEan categories thus not acceptable for didactic purposes. A problem-orientated approach is not possible while following these categories. An approach along the lines of a critical social geography is recommended instead. 'Regional geography' is critically dealt with in a chapter of its own by making use of the 'mental map' approach (an impressive and stimulating part). Ample recommendations on how countries should be treated within the context of both political education and a critical theory of society round the chapter off.

KÖCK et al.: The problem is primarily dealt with in the chapter on objectives (KÖCK), the question being not so much that of finding a balance but how to find the proper objectives. In doing so systematic geography seems to be better suited, the more so since all approaches of regional geography have their methodological roots in systematic geography.

KREUZER et al.: Systematic geography more important for epistemological reasons, but regional geography necessary for practical reasons. Possibility of different 'regional geographies' according to the purpose demanded or chosen (BARTELS). Pleading against a schematic ordering in regional geography (based on a clear summary of objections), and for a problem-orientated regional geography instead, in which systematic and regional aspects can be connected with each other, especially with regard to generating competent spatial behaviour. In order to achieve such behaviour different regional examples have to be covered (KREUZER).

SCHMIDT: Attempt at a balanced treatment of systematic, social, applied and regional geography, with a one-sided emphasis however on regional geography in its traditional guise. Applied geography in its usefulness for all problems of planning is viewed as a positive enrichment of school geography (with examples given).

G. Importance of teaching methods

BAUER: Advocacy of a combination of inductive and deductive elements in the learning and teaching processes as a consequence of POPPER's reasoning on how research is accomplished. Supplemented by a productive review of teaching methods and media.

BIRKENHAUER: Many references to questions of methodology and how to solve them throughout the two volumes; many practical hints what to do in the classroom.

EBINGER: Against the schematic procedures usual in the past; the many opportunities that are opened up by the host of new media available today are illustrated. However, media not seen as playing the final role in the choice of methods, but the objectives of a particular lesson.

HAUBRICH et al.: More than half of the book dedicated to methods, especially if one includes all the parts on media, though methods as such are not discussed very much. They are usually seen in connection with media only. The psychologic aspects of teaching geography are dealt with in a separate chapter, valuing such a base as important for methodological reflection.

JANDER et al.: Treated under the headings 'didactics' and 'social ways of teaching'. Methods are seen not as pragmatic means in themselves but as means of implementing ideological aims if carefully designed as such. Methods should always be evaluated and selected out of the knowledge of an intricate context of objectives, subject-matter and methodology. Methods best suited to reach an objective are carefully pointed out (in other chapters as well).

KÖCK et al.: In explaining the socio-cultural and the epistemological foundations of learning, a host of practical hints for actual classroom teaching are provided (BIRKENHAUER), supported by chapters on learning principles and processes and equally enriched by many concrete illustrations and aids (THEISSEN).

KREUZER et al.: Questions of methods dealt with in the chapters on media (FICK), teaching principles and geographical teaching processes - learning capes and bays, comparative procedures, schematic versus dynamic methods, problem-orientation (KREUZER), stressing the importance of media for the structuring of lessons and the importance of 'original encounters' (excursions, field-work), supported by other chapters on techniques and the grading of learning (STROPPE, BAYER).

SCHMIDT: Methods seen as determined by one's objectives. Systematic coverage of objectives in several chapters with critical surveys of their usefulness. Connection of methods with the different forms of teaching; much advice how to open up geographical objects to the pupils. Rounding-off by many examples.

H. Science orientation of teaching geography

BAUER: All teaching to be treated scientifically. Consequence: teacher's behaviour science-orientated as well. Already in primary schools and as a matter of course on advanced levels. Logical thinking to be trained as well as thinking in patterns. Information and insights to be gained by rational procedures.

BIRKENHAUER: Rational behaviour and logical thinking as important aims in themselves; not to be exaggerated however for pedagogic and psychologic reasons; leading to an adequate reduction of complexity and of intellectual presumption without however desisting from introducing scientific approaches.

EBINGER: As a consequence of the ever-growing importance of scientific results and methods in every day life scientific attitudes should be properly trained in school, with special significance naturally on advanced levels. Teachers should make themselves aware of new scientific trends, dedicate some time to equivalent studies of their own and be open to innovations, finding and developing new ways for themselves.

HAUBRICH et al.: No particular reflections, though mirrored in the discussion of teaching objectives, especially in dealing with taxonomies.

JANDER et al.: Originally to be discussed under headings 'science and theory of science', yet later not incorporated in the manual, but published separately (Osnabrück, Studies of Geography, vol.5).

KÖCK et al.: The conception of this handbook as a whole is sustained by a high scientific standard and a similar estimation of science's contribution to all fields. Science-orientation as a principle is expressly dealt with by BIRKENHAUER, pointing out however where it seems to be justified and where not.

KREUZER et al.: The book achieves a high intellectual and scientific standard, not only in the staggering chapters, which again and again comment both on the relations of school geography and geography as a science and on all other academic disciplines including general didactics as an educational science. By doing so the book endeavours to give adequate and empirically proved reasons for what should happen in the teaching of geography. Science-orientation is, however, not exaggerated, exaggerations of the school subject being deplored in several instances for psychological and sociological reasons.

SCHMIDT: Principally opposed to even preliminary endeavours towards science-orientation, founded on deeply felt pedagogic obligations towards the pupils. Nevertheless indebted to geography for process and functional insights and how they should be gained in school. Moreover stress on the thinking in patterns as a valuable asset for what should be learned in geographical lessons.

I. Forms of teaching

BAUER: Several forms dealt with, but stress on projects, especially for advanced level. Tests considered as a form of teaching since teaching should be judged as organized learning and feed-back built in (comparison of actual results with the planned objectives).

BIRKENHAUER: Detailed instruction covering minutely all ways of teaching, media, learning succcess, rounded off by extensive examples, especially with regard to thematic geography; instructions for how to plan a lesson and how to evaluate its success.

EBINGER: Discussion of changes within the last decades. Importance of the close connection between objectives and methods. Pleads for a better understanding of what happens in teaching. Emphasis on cultural-ecological approach to lessons. Lessons to be based on regional examples. Discussion of different methods and their learning value.

HAUBRICH et al.: More than half of the volume dedicated to this topic. Presentation of all social forms (working individually in class, home, with partners , in groups, including games and projects) in a balanced way. Critical coverage of the ways of learning (presentation by the teacher, learning by discovery for instance, and the long neglected excursions). Productive discussion of different approaches (ideographic, nomothetic, inductive, deductive). Separate chapter on how to control and measure the effectiveness of learning (test and test construction). Helpful advice for planning lessons and analysing them.

JANDER et al.: Apart from suggestions within the chapters on various aspects of systematic geography, a separate chapter dedicated to the social forms of teaching geography (groups, games: problems and dangers, instruction by programs, projects, excursions, working with texts and partners, motivational questions), all aspects extensively discussed. Media dealt with in another chapter with a very helpful list of criteria for the judging of media and their usefulness.

KÖCK et al.: Very extensive discussion of all forms and media (THEISSEN). Special chapter on how to plan lessons and to evaluate their success (BIRKENHAUER).

KREUZER et al.: Extensive coverage of different methods and media (KREUZER, FICK, BAYER, STROPPE). In all chapters many hints on how to knit together teaching methods and media.

SCHMIDT: Not very systematic; subjectively based choice of forms, methods, media, though with examples and much helpful advice on how and where to use methods and media. A very instructive chapter of how to plan lessons and how to review them afterwards, however not based on a concrete example.

K. Succession and choice of subject-matter for different school levels

BAUER: Discussion of controversial opinions in different chapters, e.g. primary level, advanced level (not dealt with by any other author), relation to social studies, distribution of topics over years and lessons.

BIRKENHAUER: Nil

EBINGER: Detailed description of institutional frame work and its development since the 16th cent., with emphasis on the separate development in the eastern and western parts of Germany. Detailed discussion of the different school levels from primary to advanced and of geography in comprehensive schools (only author to deal with this particular aspect).

HAUBRICH et al.: No particular advice given (except for advanced level), probably because of the pragmatic orientation of the authors towards the beginner's needs. Description of the development of the newly introduced subject 'social studies' (since the sixties) with a discussion of the evolution of the position of school geography within this field of learning (since 1972); a comparison of the role of different subjects, including history, within social studies.

JANDER et al.: Only for primary education and for social studies

KÖCK et al.: No special chapter, but discussion of contemporary and earlier positions (BIRKENHAUER) under the heading of 'geography as a subject amongst others in school'.

KREUZER et al.: No discussion given for the Federal Republic, but comparison of conditions in ten other countries (SPERLING) with special respect to school systems, organizational questions, science-orientation, in-service-training, future trends.

SCHMIDT: Nil

L. Syllabi, curricula

BAUER: Penetrating analysis of final syllabi and draughts leading to them both in pursuit of weak points, and in relation to necessary changes to achieve a permanent improvement of curricula. Extensive and illustrative examples from syllabi for primary and advanced levels.

BIRKENHAUER: Not much discussion, only with reference to the representation of systematic and regional geography as well as orientation of subject-matter on objectives and geographical concepts.

EBINGER: Critical discussions of syllabi and sequences of lessons, centred on regional geography, especially if pivoted on the (unjustified to him) principle of 'from the near to the far' (with the resulting concentric approach to regional geography). Discussion of changes throughout recent decades, with stress on the then leading role of endeavours in Hamburg and proposals for the introduction of case studies. Discussion of the formative role of objectives.

HAUBRICH et al.: Concerned with objectives as guide-lines for both teaching and syllabus construction. References only to existing syllabi (e.g. importance of social geography, incorporation of geography within the social studies in the Länder Hessen, Niedersachsen; the learning spiral). Special stress on how to transform syllabi into practical teaching.

JANDER et al.: Some implicit references only, these however particularly directed against a too rigid syllabus orientation in actual teaching (cf. 502 f.).

KÖCK et al.: Objectives, the ways to decide on them , how to select and structure subject-matter according to such decisions are widely dealt with in a central chapter (KÖCK), consistently with a review of old and modern syllabi and their historical context. Objective-orientation as a means of making syllabi more transparent.

KREUZER et al.: Extensive discussion of syllabi, their construction and the role of objectives (HENDINGER). Broad discussion of the role of geography within the context of society and politics while pointing out negative trends in several German Länder (ENGELHARDT). The role of concepts for syllabus construction (FICK). Problems of construction (FICK, KREUZER).

SCHMIDT: Frequently mentioned but no systematic treatment. Criticism of reformed syllabi, with strong advocacy of regional geography and of using a variety of methods. Home region as the pivot for world-wide orientation and geographical education. Proposals for structuring and sequencing of subject-matter, centred on the principle of 'from the near to the far'.

M. Treatment of media

BAUER: Nil

BIRKENHAUER: One of the main aims: to advocate the competent usage of media by the pupils themselves as instruments in their own right for gaining information, learning by discovery, etc. Starting point should always be the original and vivid encounter with subject-matter: a situation, a problem, etc. Therefore many suggestions are given for a sensible filing of material and observation of tasks. All media are at first sight nothing but substitutes for encounters that cannot be studied in reality. Media can gain only a secondary function in order to stimulate and to make possible processes of thinking and learning. Many tips and examples for usage in the classroom are given with a special emphasis on the processes mentioned. With the more abstract media (maps, statistics) the author is concerned in removing possible difficulties in their actual usage so that learning may achieve best results. The particular advantages of transparencies, especially if made by the teacher himself for his particular purposes are broadly discussed.

EBINGER: Concise and fundamental characterisation of the most valuable media. Pictures, models, texts, maps, statistics and schoolbooks are useful aids for teaching and for the understanding of the subject-matter, especially if the media are co-ordinated with each other wherever possible.

HAUBRICH et al.: Because of the importance of media for the development of school geography, media are dealt with in a chapter of their own (BRUCKER). Starting with those forms that are easily integrated into the lessons (sketches, graphs, profiles), diagrams are introduced, leading on to maps and atlases. Working with books, working-sheets,models, globes, telluriums, photographs (including satellite ones) and films is illustrated. Cartoons, transparencies, broadcasts, TV-films are not forgotten. Thoughts on how to educate pupils by the usage of media and suggestions how a geography room should be devised round off the chapter. The encyclopedic grouping of the chapter helps towards a rapid orientation though cross-referencing and thus a deeper and coherent understanding is made more difficult.

JANDER et al.: Attempt at systematization of media, followed by a critical (in the best sense) view of what should be done by and with media (SCHRAMKE), trying to help the teacher avoid all possible negative experiences, and to intensify his preparations and thereby the learning success of pupils, giving them improved chances for doing things themselves. Criteria for the evaluation of media together with an overview over what is offered on the national media market are very helpful.

KÖCK et al.: THEISSEN starts with defining and systematising media, their functions and their usage, then going on to a detailed description of each of them, again placing in the forefront those media which offer direct experience or are well suited as models (e.g. globe, sand box), followed by all pictorial media and transparencies. Sketches, diagrams, profiles, cartoons are illustrated with their particular opportunities, whereas maps and atlases are treated on less broad a scale. The same applies to statistics. Apart from the media mentioned above all other media are dealt with in an extensive and very helpful way.

KREUZER et al.: FICK bases his treatment of media on the theory of 'original encounter'. Many situations in which it is possible to start from real observations, their description and interpretations are offered. It is only then that media can begin to serve as carriers of geographical subject-matter and as means of learning by discovery. He goes on to systematise media according to the opportunities they offer towards encounters with the reality around us (immediate, mediating and abstract). Pictures, texts, models are juxtaposed with maps, atlases, transparencies, profiles and statistics. Media systems may have their advantages or disavantages. Best combinations of working with media (with examples of the more important ones) round off the book.

SCHMIDT: Traditional grouping of media; many advices from the author's own practical experiences.

4. Concluding remarks

The comparison of the eight handbooks available for the teaching of geography in the Federal Republic of Germany will have shown to the interested reader that each (understandably)has a special emphasis of its own, some of which may be omitted completely in one or the other of the manuals. Though all try to deal with their subject in an objective way a subjective commitment of each author makes itself strongly felt. Such a situation should however be judged as a welcome opportunity for selecting alternatives.

Alternative standpoints can certainly be better expressed within manuals compiled by a team of authors. Nevertheless the resulting differentiation into a considerable number of headings leads to diverse problems for the reader. Inconsistencies show up which cannot be overcome even by diligent editing. However, a 100 p.c. concistency might be rather tedious for the reader.

Comparing the eight handbooks one is moreover well able to see in which way authors and editors were influenced by the 'Zeitgeist' of the times, when they studied at the universities and of the time when the books were actually compiled. The books by BIRKENHAUER, EBINGER and SCHMIDT are for example, highly influenced by general educational objectives, whereas the books by BAUER, HAUBRICH et al., JANDER et al. reflect on the relations between university and school subject, with the latter book demanding a complete new orientation of both science and subject. The books by KREUZER et al. and by KÖCK et al. can be looked upon as holding somewhat intermediary positions - the former with a stress on the traditional position (though incorporating the reform trends of the seventies) and the latter with an emphasis on the reform (additionally trying to underpin the results of the reforms by systematic and theoretical argument). The book by JANDER et al. is moreover characterized by a persistent trend to analyse the socio-political implications of the teaching of geography, both in subject-matter and in methods. Though this aspect is by no means forgotten in the other books, it plays only a subordinate role in them , with the exception of the book by KREUZER et al., where a special chapter (by ENGELHARDT) is dedicated to the relations of geography and society.

The necessary relation of such manuals to practical needs, especially for the student and the trainee-teacher, is taken up in very differing ways. It is decisive without doubt in the books by HAUBRICH et al. and JANDER et al., making itself felt in the very lay-out of these books. This does not mean that the other books ignore this aspect; it is for instance treated with excellently and distinctively in the books by BIRKENHAUER and KREUZER et al. SCHMIDT's book - in spite of its very personal stance - is in this respect also very stimulating over wide areas.

Summing up one is able to point out the obvious fact: there is no single handbook in Germany today that meets all the needs of a potential user. Even if one took up all eight books together, looking at them as just one body one would be forced to say that they leave open quite a lot of important issues: for instance, an even more systematic way of tackling the subject, and an even stronger and more penetrating consideration of theories in the educational field, a better provision of references towards the handling of their different parts, as well as a broader insertion of helpful approach to the effectiveness of teaching forms and media.

This chain of thought naturally leads on to reflections as to what one should demand of handbooks-to-come: certainly, not so much a compilation of mere individual teaching experiences but rather more the incorporation of empirical research (still to be desired over wide fields). It is only in this way that didactics will be enabled to express what it has to say with a higher validity; it is only thus that it can be steered away from the subjective preferences of authors, who, by the way, are nevertheless the same people who at the same time pass judgements on the performances of others.

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Helmut Köck

The geography curriculum in the Federal Republic of Germany after the reform circa 1970

The following paper on the geography curriculum in the Federal Republic of Germany after the reform circa 1970 in turn

- clarifies what the notion 'curriculum' means,
- characterizes the situation in the Federal Republic of Germany before the reform circa 1970,
- describes the causes and the course of the reform,
- depicts the basic characteristics of the reformed curriculum in the Federal Republic of Germany,
- and describes the reform's subsequent reform.

1. Curriculum

According to a definition by *FREY (1969, 270), a curriculum is understood to be an organized representation of teaching over a certain period of time by means of a consistent system with several dimensions planned to guarantee optimal instruction and evaluate its success.

The individual dimensions of this system are formed by

- the operational formulation of the desired learning objectives,
- the assignment of possible content by means of which the objectives desired are to be/can be achieved,
- proposals concerning the instructional organization which seems to be suitable to implement the objectives desired and contents assigned (teaching forms, working methods, media, material, learning steps, learning sequences, etc.),
- statements concerning the possibilities of how to monitor the success of teaching

(cf. *FREY 1969, 270-272; *DEUTSCHER BILDUNGSRAT ^{4}1972, 63/64; 1974, 21; *MÖLLER ^{4}1973, 27-29; *WESTPHALEN 1974, 42/43; *KECK 1975, 40-42). Briefly, a curriculum is a

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Authors whose names are marked with an * are non-geographers.

well-founded correlation between decisions concerning learning objectives, subject matter, instructional organization and learning checks (cf. *MEYER 1976, 128). Curricula are generally presented as multi-column systems in order to make sure that the horizontal relation between the different curricular dimensions are already visible in the form of presentation.

This may be done as follows:

learning objectives	subject matter	instructional organization	learning check
a_{lo}	a_{sm}	a_{io}	a_{lc}
b_{lo}	b_{sm}	b_{io}	b_{lc}
c_{lo}	c_{sm}	c_{io}	c_{lc}
...	...	...	...

Apart from this horizontal multi-dimensionality, the vertical (hierarchical) structure is of principal significance for curricula, thus actually showing the advantage of the notion 'curriculum'. For the curriculum in the sense of a "curriculum vitae" (*WESTPHALEN 1974, 41) takes into account the fact of psychological development: pupils constantly improve their cognitive abilities while at school [cf. *NICKEL 1975; *PIAGET 1976; *OERTER ^{17}1977$^{1)}$ (meaning: 17th edition in 1977)]; thus learning is to be understood as a continual process during which increasingly better learning can be achieved and should therefore be demanded. Hence it follows that curriculum developers have to plan and organize the learning-process hierarchically in order to make possible a process of permanent cognitive development. This process has to be a systematic progress from one level to the next, from simple to complex, from subordinate to superordinate, from particular to general learning achievements. As far as the logic of learning and factual logic are concerned, the pupil's earlier achievements are the precondition for later ones (cf. GEIPEL 1968, 43; *GAGNÉ 1969, 26, 141/142; *FREY/*ISENEGGER 1975, 160; KÖCK 1980, 50). It follows that the maximal achievement of learning objectives has not been reached when the pupil leaves school. To maximize achievement, a precondition is a hierarchical structuring within the objective-subject matter systems and not with regard to these individual systems (cf. *BRUNER ^{3}1973, 26/27, 44, 61-63; HENDINGER 1973, 89/90; BAUER 1976, 35; RICHTER 1976b, 383/384; KIRCHBERG 1977b, 29; KÖCK 1980, 50/51).

2. The situation before the reform circa 1970

Before 1970 the syllabus was structured and understood in a different way. It was defined as a compilation of systematically arranged subject matter to be taught within a certain period of time in a certain subject at a certain type of school (*BLANKERTZ 1969, 111, 115; *KECK 1975, 34).

In contrast to the curricula after the reform, the curriculum before 1970 was almost confined to one dimension, i. e., the one of subject matter. Learning organization and learning checks were not explicitly mentioned, and neither were learning objectives. Only in the preambles of the curricula statements similar to objectives could be found. These statements preceded the list of subject matter. However, they concerned geographical instruction as such and referred to the general and actual importance and profit of this instruction without having any substantial relation to the subject matter to be taught and in particular without any formulation of operational objectives (cf. BIRKENHAUER/HAUBRICH 1971; HARD 1977; 1978; KÖCK 1977; 1986a. 143-145).

Before the reform geography instruction was respectively matter- or content-oriented for two reasons. First, those general preamble statements had practically nothing to do with the concrete subject matter. Second, there was no reasoned and deduced correlation between the subject matter and the preamble statements. The subject matter was the only starting and reference point for all instructional activity (cf. KÖCK 1980, 15-18; 1986a, 138-140). Moreover, this matter-oriented geography instruction was also not hierarchically structured (GEIPEL 1968, 42/43). However, there were first efforts to change the horizontal-additive order of subject matter into a vertical-hierarchical one, the reason for this lying in the psychological development of the pupils (cf. GROTELÜSCHEN 1965; SCHÄFER 1965; GERBERSHAGEN 1968/69). However, these new approaches (especially GROTELÜSCHEN and SCHÄFER) failed to obtain their full effect until they met with the reform pushed ahead by other developments, that is, by means of accompanying text books (see the paper by VOLKMANN in this volume).

Before the reform, the subject matter of geography instruction consisted of countries, groups of countries, continents, landscapes, etc. Geography teaching was regionally oriented ("Länderkunde"). Teaching was done in particular through the 'regional geography principle' and through the study of 'typical landscapes', otherwise also according to the 'principle of the exemplary' as well as the principle of 'dynamic' and 'thematic regional geography' (for the 'principle of the exemplary': see Part Three). The regional geography of the earth was generally covered by means of the big steps 'Germany' (5th school year/11 years of age), 'Europe' (6th school year/12 years of age), 'other continents' (7th and 8th school years/13 and 14 years of age). Thus, the ordering principle was 'from the near to the far' or the 'principle of concentric circles'. A hierarchy as demanded by the psychology of learning was not achieved. In addition to this regional geography of the earth, questions and elements of general geography were also dealt with, especially in the final classes of the 'secondary level I' or for the 11th class (17 years of age) of the 'secondary level II' at grammar school. In addition, the landscape belts of the earth were covered especially in the 11th class at the 'secondary level II'. In the classes 12 and 13 (18 and 19 years of age) of the 'secondary level II', geography teaching was, from 1960, of part a social subject course comprehending several subjects and assumed the char-acter of thematic geography (cf. KÖCK 1986a, 138-140, 143-145, 152/153, 169-171, 180-182 (summarizing representation) as well as individual representations in WAGNER 1952; 1957; DURACH 1956; ADELMANN ^{2}1962, 56-70; BAUER 1966; 1968; VERBAND DEUTSCHER SCHULGEOGRAPHEN 1966; GERBERSHAGEN 1968/69; BIRKENHAUER 1971a; BIRKENHAUER/HAUBRICH 1971; HAUBRICH et al. ^{3}1984, 37-41; KÖCK 1980, 15-18; SPERLING 1980, 5-7, 20; 1981, 7-8).

3. The reform: reasons and course

The first efforts to abandon the principle of regional geography go back even before 1950. Roughly speaking, two different approaches can be distinguished. The first approach sought to improve regional geography especially in the 5th and 6th classes by involving topics of general geography (cf. SCHWIND 1947; HINRICHS 1949; ed. ^{2}1950; SCHNASS/GERBERSHAGEN 1952; GROTELÜSCHEN 1965). The second approach aimed to exclude the kind of regional geography which strove for overall coverage, and replace it with an example (case study) oriented procedure (cf. DURACH 1956; KNÜBEL 1957; ed. ^{2}1963; ^{2}1963a; ^{2}1963b; WOCKE 1958; ^{5}1964; BAUER 1959; SCHÜTTLER 1960; STENZEL 1960; DRAGA 1961; MEIER 1962; HERMANN ^{2}1963; NEWE ^{3}1963). The example being chosen as representative of a "class" - the Nile oasis for all river oases, etc. which encouraged more in-depth understanding. This approach was in Germany called the 'exemplary' approach. In the main, two variants were discussed by geographers. Whereas the 'pars-pro-toto' variant (e.g. one Mediterranean country ('pars') as the epitome of all Mediterranean countries or the Mediterranean region respectively as a whole ('totum')) of this pseudo-exemplary reorientation was doomed to failure (SCHULTZE 1959, 492/493), the variant of the 'typifying' exemplary regional geography (e.g. the Harz as a typical mountain range in Germany) already shows a clear proximity to the exemplary procedure used nowadays. Taking a narrow view of the exemplary principle, however, SCHULTZE's proposal of 1959 ("the actual exemplary principle", 493-495) based on the pedagogical discussion of the exemplary under way at that time (*FLITNER, *KLAFKI, *SCHEUERL) can be considered to be the factually correct forerunner of the exemplary approach. However, this approach, together with systematic geography, was not accepted until the reform circa 1970.

What were the causes of this reform? Roughly speaking, stimuli originated from three different sources at the same time, i.e., general didactics, geographical didactics, (including geography teaching) and the science of geography.

- Stimulus from general didactics:

The stimulus from general didactics was based on the social and educational situation in the Federal Republic of Germany in the early sixties. The following characteristics of that situation are considered to be the most important (cf. *KNAB 1969b, 171-174: *RASCHERT 1969, 54/55; *ROBINSOHN 1967, 23-31; 1969, 633-635; *ZIMMER 1969, 33-40): explosion of knowledge, intellectualization of life and, as a consequence, of school; constant and rapid changes in the economy and the professions; insufficient legitimation of the actual task of school as well as the tasks of the individual subjects; the uselessness of the general, vague, stereotyped and non-operationalized objectives in the preambles of the curricula; orientation to school types and educational expectations according to social class; too large an amount of subject matter: teaching as a mere reproduction of the reference science concerned ('Abbild-Didaktik'); insufficient application of the contents to the needs of adult life; etc.

Against this background, the concrete stimuli stemming from general didactics were the shift from stressing theoretical aspects to procedures oriented to the so-called 'situations in life', its qualitative aspects and thus behaviour. This claim was in particular ennunciated by *ROBINSOHN (1967) and his team (especially *Doris KNAB), but before as well by the *DEUTSCHER AUSSCHUSS FÜR DAS ERZIEHUNGS- UND BILDUNGSWESEN (1964/66) and later by the *DEUTSCHER BILDUNGSRAT (1970). The reform necessary to achieve this orientation was understood as a 'revision of the curriculum' by *ROBINSOHN (and his team). *ROBINSOHN's proposals followed in particular the Anglo-American discussion of the curriculum by *BRUNER et al. Starting from the general objective to enable pupils to master different situations in life, any revision of the curriculum has, according to *ROBINSOHN, to identify

- first, the situations in life which everyone has to be able to cope with;
- second, the qualifications (understood as dispositions of behaviour) required to master the main situations in life;
- finally, the instructional content by means of which the necessary qualifications can be taught.

Supporting influences in particular came from *BRUNER (1960) and *MAGER (1961), but also from *HEIMANN (1962), *ROTH (1962) and *HEIMANN/*OTTO/*SCHULZ (1965).

- **Stimulus from geography didactics and the teaching of geography**

The reform efforts of geography didactics and geography teaching were stimulated by the fundamental and no longer acceptable short-comings traditional regional geography was blamed for. The following short-comings were considered to be the most important (cf. GEIPEL 1968, 43; GERBERSHAGEN 1968/69, 289/290; BÄUERLE 1970, 23/24; HENDINGER 1970, 11/12; SCHULTZE 1970, 2, 6; 1979, 2; BIRKENHAUER 1971a, 42-48, 63-69; HAUBRICH et al. ^{3}1984, 46; SPERLING 1980, 21/22; SCHRETTENBRUNNER 1981a, 10; HARD 1982a as well as before SCHWIND 1947, 42-47; HINRICHS ^{5}1957, 10-13; GROTELÜSCHEN 1965, 366/367): conceptual and methodical schematism; deficiency of motivation; large amount of subject matter; superficial and descriptive factual content; lack of a problem-solving orientation; failure to draw attention to rules and patterns; stress on uniqueness; no possibilities of transfer; additive order instead of hierarchy reflecting a conceptual framework deficiency or absence of preparatory courses in scientific method; lack of progression-complexity of material not matched with learning and development psychology; etc. The most radical judgement on regional geography was pronounced by SCHULTZE (1979, 2), speaking about "the awful scantiness of regional geography in school".

This statement becomes comprehensible when taking into account that it was in particular SCHULTZE (1970) who, in pursuit of the previously mentioned earlier effort for a systematic orientation using exemplary case studies, was the first to claim categorically as well as programmatically that "systematic geography should replace regional geography". Another impulse resulting from this internal criticism was the renewal of the claim for an exemplary opening up of the spatial facts of the earth. Connected to these two components was a third, i.e. the claim for teaching nomothetic and thus transferable knowledge and abilities instead of a non-transferable merely idiographic knowledge of facts.

These claims of reorientation by systematic geography and exemplary case studies were supported, on the one hand, by the discussion about 'programmed instruction' developed from about the mid-sixties including associated instructional programmes. The writing of these programmes led to the realisation that the contents of systematic geography are considerably better suited to programming than contents of regional geography (cf. in particular KNÜBEL 1964, as well as the WESTERMANN programmes for social geography created principally by SCHRETTENBRUNNER and HAUBRICH since 1970). On the other hand, the problem-oriented, thematic conception of the HSGP (High-School-Geography-Project) in the United States (1961 and later) considerably stimulated the process of reorientation in the Federal Republic of Germany (cf. ENGEL 1969; 1971; 1974).

- Stimulus from the science of geography:

There was considerable support for the efforts towards reform of geography didactics and geography teaching from discussions about the status of regional geography within the science of geography itself. These discussions took place at about the same time as the reform efforts in school, and can indeed be regarded as being partly triggered off by the didactics of geography and school geography. During this discussion, which was held with special intensity during and after the national congress in Kiel (1969), and had been strongly influenced by BARTEL's book "On the scientific and theoretical foundations of a geography of man" (1968), regional geography was radically questioned and a methodological reorientation to a nomothetically oriented systematic geography was promulgated. This, in turn, had a beneficial influence on the corresponding efforts within the didactics of geography and geography teaching.

Another impulse which promoted and reinforced the reform came from the social-geography orientation of geography after 1968 (cf. SCHAFFER 1968; RUPPERT/SCHAFFER 1969), and in particular through the adoption of the basic functions of life concept first proposed by PARTZSCH (1964; 1970). The concept was first taken up by social geographers such as

SCHAFFER (1968) and RUPPERT/SCHAFFER (1969) and came to be looked upon (mistakenly, however: editor's comment) as being the geographical answer to *ROBINSOHN's demand.

The reform itself and its implementation can now be understood as a gradual process, involving the merging and combination of individual trends of which the main parts had previously developed independently of each other (cf. the comprehensive representation in KÖCK 1986a, 140-142 as well as the many individual representations as in FICK 1970; SCHNEIDER 1970; HAUSMANN 1972; FÜLDNER 1973; SCHULTZE ^{3}1973; 1979; 1980; KIRCHBERG 1976; SCHRAND 1976; 1981; GERLACH 1977; HAUBRICH 1977; KÖCK 1977; 1980, 25-29; HOFFMANN 1978a; 1978b; 1978c; SCHRETTENBRUNNER 1975; 1978; 1981a, 9-22; ECKHART 1979; HAUBRICH et al. ^{3}1984, 37-104; SCHRAMKE 1980; SPERLING 1981, 5-28; NIEMZ 1984; 1986): Already by 1967, GEIPEL had introduced the basic ideas of curriculum renewal initiated by *ROBINSOHN into geography didactics and school geography. He did this in his lecture on "Urban geography in school teaching" during the national congress in 1967 at Bad Godesberg (cf. GEIPEL 1969a) as well as in 1968 in his paper "Geography within the canon of the school subjects: some considerations regarding the problem of the geographical curriculum".

Thus by 1968 the combination of the social-geography concept of the basic functions of life and the general didactic concept of curriculum revision had provided a basis on which the reform of the geography curriculum could be implemented. Such an implementation was aimed at during the meeting in 1968 organized by GEIPEL and PULS: After *KNAB's lecture about the new concept of curriculum revision and after SCHAFFER's lecture on the new conception of social geography and particularly on the basic functions of life, it was thought that the basic functions of life met the demands of *ROBINSOHN's curriculum theory, i.e. they could be considered as geographically or spatially relevant life situations. In 1969, this combination was presented to the public in BAUER's essay on "Theses about the reform of the geographical syllabi". Moreover, BAUER, in the same essay, was probably the first to present an outline on geographical qualifications and contents (curricular elements).

A synthesis of systematic geography with curricular theory was achieved by HENDINGER in her essay "Approaches to a new geography in the curriculum of all school types" (1970). Here, regional geography was considered to be useless and systematic geography orientation was taken as the basis for determining and arranging the contents of geography teaching. HENDINGER referred expressively to the essay by SCHULTZE "Systematic instead of regional geography!" which had been published in the same issue of the 'Geographische Rundschau'. The achievement of ERNST (1970: "Learning objectives in geography") was the synthesis of some approaches which up to that time had been partially isolated. ERNST gave differentiated catalogues of learning objectives suited to the situations of life, the behavioural dispositions and the claims of systematic geography.

Although the shift of emphasis from a content-/subject-oriented to an objective-oriented geography instruction was achieved by means of gradually combining developments which were at first individual, some activities and innovations were of crucial importance for disseminating this new approach:

- the identification of the VERBAND DEUTSCHER SCHULGEOGRAPHEN with this new concept of curriculum revision and its conviction of the need for a rapid nationwide diffusion, by means of, among other things,
- the selection of project teams and the organization of meetings on questions of curricular revision,
- the publication of the results of the projects, particularly in the form of numerous curriculum drafts,
- the publication and distribution of the official statements to the standing conference of the education ministers of the German Länder and throughout the Federal Republic,
- foundation (in 1971, again on the initiative of GEIPEL and under the auspices of the ZENTRALVERBAND DER DEUTSCHEN GEOGRAPHEN) of the 'Raumwissenschaftliches Curriculum-Forschungsprojekt' (RCFP) and its implementation over 10 years. This implementation (1) included evolving a conceptual framework for the entire programme, (2) then the decentralized development, testing and evaluation of numerous instructional units in the form of innovative curricular components from regional project groups, and finally the publication of these instructional units; all

this following closely the ideas of *ROBINSOHN as well as the American model, the 'High school geography project' (HSGP) (cf. among others GEIPEL ed. 1971; 1972; ed. 1975; 1978; 1981; SCHRETTENBRUNNER 1975; 1981b; 1982; 1983; HOFFMANN 1976; ENGEL 1978).

However, one should bear in mind that the rapid and wide dissemination of this radical reform did not only become possible because of its apparent plausibility, as well as the numerous and deeply committed (even euphoric) activities, but also because it was identified as a release from the "awful scantiness of regional geography" (SCHULTZE). At the same time the subject seemed to be rescued from the general crisis within the school canon. Moreover, the new text books, being published since 1970, were received by the teachers with enthusiasm and therefore have contributed to the wide and rapid adoption of the reform (see VOLKMANN's paper in this volume).

4. Essential features of the reformed curriculum

The reform resulted in a better understanding of the interrelationships necessary for the shaping of a geography curriculum though discussions during the reform period mainly centred on those dimensions mentioned in section 1 (objectives, contents, their vertical and hierarchical arrangement, procedures and criteria used to determine them).

4.1. Objectives

Corresponding to the change in general didactics, outlined in section 3, it became the task of geography instruction, to formulate behavioural objectives understood as qualificational or behavioural dispositions. They are meant to enable the pupil as an adult to behave adequately and participate in social life taking account of spatial conditions on earth and what these imply.

This behavioural qualification with its fundamental relationship to social life was regarded as to be the only legitimation for any subject in school. Therefore, contents, methods, media etc. in geography were seen as a means to achieve objectives related to this fundamental aim. Since the reform geography instructions as well as curricula in general have been described as 'objective-oriented'. Contents, methods, media etc. are thus a function of the corresponding objectives and are determined by the realization of these objectives.

Corresponding to the individual human fields in which behavioural dispositions are built up and behavioural achievements can be produced, geography teaching strives, in the sense of a 'horizontal' or 'dimensional differentiation', for cognitive, affective and instrumental (used in German geography instead of 'psychomotoric') behavioural dispositions. In German geography this was done by partly following the systematic classifications of BLOOM and his team (1956) (cf. KÖCK 1980, 11-31; 1986a, 145-151 as well as GEIPEL 1968; BAUER 1969; ERNST 1970; 1972; HENDINGER 1970; HAHN 1974; RICHTER/HAUSMANN 1974; HAGEN 1975; 1982; HAUBRICH 1977; 1982; 1984a; KÖCK 1977; HASSE 1978; 1979; BIRKENHAUER 1982b).

Which behavioural dispositions did geography instruction concretely embrace after the reform? Put in terms of one central objective for geography teaching, their main aim can be summarized as "competence of spatial behaviour" (cf. KÖCK 1977, 19, 27; 1979, 258; 1980, 25). This competence refers to the ability of the pupil to organize the spatial dimensions of life in an adequate way. The (shortened) argument for the central nature of this objective runs along the following lines:

- Life is related to (earth) space.
- Consequently, an important precondition for mastering life is the mastering of the spatial dimension of life.
- Geography represents the spatial dimension of life in school.
- Consequently, geography instruction is responsible for imparting the behavioural dispositions of space and life, i.e., the "competence of spatial behaviour".

There is a broad consent among geographers about this objective (cf. eg. VERBAND DEUTSCHER SCHULGEOGRAPHEN 1975, 350; BASISLEHRPLAN 1980, 548/549; BIRKENHAUER 1981a, 51, 53; 1986a, 219, 220; KÖCK 1986a, 145-151). Only in phrasing there are some minor differences such as 'to impart a social competence'/'to make spatially competent' (KIRCHBERG 1976, 352; BÖRSCH/LORENZ 1977, 102), 'imparting of a competence in spatial behaviour' (HASSE 1980, 33; 1986), 'education for spatially responsible action' (REINHARD 1982, 131, 132). The most drastic terminological, conceptual and conceptional modification can probably be found in HAVELBERG (1982; 1986a) who considers education for 'ecological humanism' to be the most important objective of geography teaching. A further analysis of what this notion implies, however, shows a wide agreement with the meaning of the concept 'competence of spatial behaviour' and others, for in the end, HAVELBERG's main point is to facilitate an adequate spatial behaviour, in so far as he also starts from the space-related requirements of man and puts these into an ecologically viable framework (1982, 11-15, 19/20, 35-64, 81; 1986a, 81-85).

There is a similar consensus concerning the most important objective for geography teaching in the secondary level II (grades 11 to 13). Apart from this competence of spatial behaviour, the objective involves a political education in spatial terms as well as the criterion of a preparatory scientific education (cf. e.g. BAUER 1969, 464; 1976, 98/99; BÖRSCH/LORENZ 1977, 103/104; HENDINGER 1980, 70; 1982; KIRCHBERG/RICHTER 1982, 10-12, 18-23; FRIESE 1984).
In spite of this fundamental consensus on this one main objective there are nevertheless - as is to be expected - differing accentuations, since some authors stress the pedagogical and educational dimensions (e.g. ALBRECHT, BIRKENHAUER, HAUBRICH, HAVELBERG, and many others), other authors the rational and cognitive dimension (e.g. KÖCK, SCHRETTENBRUNNER, and many others) and other dimensions of behavioural application in geography. Going into further detail is, however, not necessary here.

There is a considerably weaker consensus as concerning the formulation of the lower-order objectives, though there is some agreement as what would qualify for spatially relevant situations in life in the sense of ROBINSOHN. But how the 'situations in life' should be interpreted, differs from author to author and from group to group.

The systematization of the 'situations in life'according to the concept of the basic functions of life was the first to gain great influence (see section 3). The concept became accepted in the didactics of geography in the version given by SCHAFFER and RUPPERT, (cf. SCHAFFER 1968; 1969; RUPPERT/SCHAFFER 1969; BAUER 1969). According to that version, the following basic functions of life were considered to represent spatially relevant 'situations in life': to reproduce oneself and to live in communities; to have a home; to work; to provide for oneself and to consume; to learn; to engage in leisure activities; to move about. It was KÖCK who developed a system of objectives for geography instruction corresponding to these basic functions of life (1979, 258; 1980, 47-49, 53-55). He reduced, however, the number of basic functions of life to five by integrating 'to learn' into 'to provide for oneself' as well as by assigning 'to reproduce oneself and to live in communities' partially to 'to have a home' and partially to 'to provide for oneself'. As a consequence, the one main objective, i.e., the competence of spatial behaviour, was subdivided into the subordinate objectives 'domestic competence', 'working competence', 'providing competence', 'recreational competence', 'movement competence'.

Another systematization of spatially relevant situations in life is related to the general situations elaborated by *v. HENTIG (1968). These are "life in a more rapidly changing world", "life in a specialized world, the principal aspect of which is the division of labour" and others. Above all, HENDINGER (1970) and BIRKENHAUER (1972b; 1975) have critically incorporated the system by *v. HENTIG into geography teaching. According to HENDINGER (1970, 13), the following features are important for geography teaching:

Living
- with the possibilities given by nature
- in a rationalized world dominated by science
- as a social being in social groupings
- in the world characterized by the division of labour
- in a consumer society

- in a more rapidly changing world
- in the 'one' world characterized by the integration of economy, society and politics.

According to BIRKENHAUER, and in contrast to HENDINGER, geography teaching has to equip people for life in a world

- which is in the process of industrialization,
- which is in the process of urbanization,
- which shows spatial and geographical disparities,
- in which the different parts are interdependent, reflecting different natural potentials,
- in which resources are limited,
- and in which life in natural regions is of great importance (1972b, 58/59; 1975, 53).

Against this background, HENDINGER (1970, 14/15) worked out superordinate objectives which exactly correspond to the system of 'situations in life' which she took as a basis. Thus, the main objectives of geography teaching are the following behavioural dispositions

- to investigate carefully the possibilities provided by nature,
- to adapt to a life in a rationalized world dominated by science,
- etc. (see above).

The main objectives proposed by the BASISLEHRPLAN (1980, 549) for the geography instruction at the secondary level I are also oriented on the relevant situations in life. They have, however, not been formulated in direct correspondence with these situations. This basic curriculum is of particular importance, including its statements on objectives and contents, in so far as it was worked out and adopted by the ZENZTRALVERBAND DER DEUTSCHEN GEOGRAPHEN, (the confederation of the five national associations), in this taking into account the interests of numerous other interest groups as well as the objectives formulated by the curricula of the school authorities (cf. HAUBRICH 1979; 1980). According to this 'basic syllabus', geography instruction is to pursue the following main objectives:

"1. Knowledge of forms of land use and economic activities especially in the home region, in Germany and Europe;
2. Knowledge of exemplary processes and problems in different parts of the world as concerning nature, economy and society; their reasons and effects;
3. Knowledge of international and worldwide relations and interdependencies as concerned with natural, social and economic geography;
4. Knowledge of the topography and the spatial structures of the earth;
5. Ability to comprehend space using geographical categories and methods;
6. Ability to explain the living conditions of people in their geographical relations;
7. Ability to apply geographical methods and auxiliary means properly to relevant situations of life;
8. Ability to contribute to the discussions of regional, national, international and worldwide problems on the basis of civil and human rights;
9. Readiness and ability to apply geographical knowledge and abilities properly and responsibly in private, professional and public life."

Further superordinate objectives, which are of greater importance within the subject at the same time, were formulated, for example, by BAUER (1969), ERNST (1970; ed. 1971), VERBAND DEUTSCHER SCHULGEOGRAPHEN (1970; 1975), HAHN (1974), KIRCHBERG (1977) and others.

Within the framework of this paper, it is not possible to deal with objective levels lower down in the hierarchy. One could however say the following about them: The lower the rank of these objectives and the more differentiated they are, the more heterogenious they become. This is especially true for the syllabi of the various school authorities in the German Länder, the variety of which can hardly be exaggerated (cf. e.g. HAUBRICH 1979a; 1979b; 1980). This becomes comprehensible only on the background of the fact that the various approaches developed in the initial reform euphoria were too soon converted into concrete curricula, that is, before they had been fully discussed. The situation was moreover worsened because of the autonomy of the 11 Länder in school affairs (cf. HAUBRICH 1979a). Thus even the 'Basislehrplan' could not be carried through.

4.2. Contents

The defiencies of traditional regional geography, the claims of general didactics to impart transferable qualifications relevant for life, and the claims of the didactics of geography to conceive teaching in exemplary case studies (cf. section 3) resulted almost inevitably in the fact that after the reform the contents of geography teaching became shaped along the lines of systematic geography. The rather sudden and categorical change from regional to systematic geography was achieved from two different initial positions. SCHULTZE (1970) pushed ahead the change to systematic geography content by taking up the discussion about the exemplary approach, trying to help to achieve a breakthrough for this principle. HENDINGER's (1970) commitment to systematic geography content, however, was to treat content as suitable for imparting transferable behavioural dispositions in the terms of the curriculum revision of ROBINSOHN.

This seemed to be possible only on the basis of systematic geography content. In this sense reformed geography instruction started out from thematically defined spatial categories, spatial types, spatial structures, spatial regularities, etc. and opened them up in the examples of especially suitable individual spaces or case studies (e.g. for densely populated areas using the example of the Rhine-Ruhr-agglomeration or of Boswash, for the infrastructural development of spaces using the example of the Trans-Siberian railway, for the problems of third world countries using the example of the Sahel zone, etc.). This exemplary knowledge should then be transferred to other spatial individuals of the corresponding spatial category, structure, type, etc.

At the same time, this procedure is in principle different from scientific systematic geography. Whereas the latter teaches the respective spatial structures/regularities systematically, and without explicitly referring to concrete spatial examples, it is in particular these spatial examples which have come to the fore in school geography. These examples have been thought to further a better understanding and to demonstrate in an exemplary way regularities of the spatial structure relevant for life (cf. also SCHULTZE 1970, 2/3; BAUER 1976, 113).

To determine instructionally relevant categories of spatial structures two proposals gained a wider acceptance during the seventies but became gradually discarded in the eighties. One of these two proposals was made by SCHULTZE (1970); he intended to treat through case studies the following structural categories (3-6):

- natural structures: i.e. spatial structures resulting from the effect of natural laws;
- people-environmen-structures: spatial structures resulting from the examination of peoples with natural spatial conditions;
- functional structures: spatial structures resulting from the division of labour between different parts of the earth;
- sociocultural structures: spatial structures resulting from sociocultural ideas.

The second proposal was made by HAHN (1974). He intended to treat the following points (104):

- selected objects and basic components of the relation between people and space as elements;
- a factor structure of nature or people and nature respectively (essentially without temporal change);
- temporally and spatially differentiated effects of social groups, social, economic and political systems;
- very complex spatial units and models of general temporal and spatial procedures.

For the concrete instructional work and curricular development, these and similar very roughly worked out spatial categories and categories of spatial structures were further differentiated, that is, they were reduced to class-logical or concept-logical levels that made it possible to implement them through case studies (such as industrialized countries, cultivation, high mountains, infrastructural planning, central places, altitude gradation of agricultural utilization, less developed regions, etc.).

Very similar spatial and structural categories characterize the secondary level II. Here they are more specialized and have been further developed to fulfill (methodologically as well as regards content) the requirements of a scientific orientation (cf. also HENDINGER 1982; KIRCHBERG/RICHTER 1982; FRIESE 1984).

In the striving to give priority to material relevant for life, the systematic geography content is conceived and geared in such a way as to emphasize, on the one hand, a social geography orientation and, on the other hand, an ecological one.

Concerning the social geography emphasis in geography teaching, initiatives go back at least to the early fifties (cf. UNTERHORST 1952; WAGNER 1952; GEIPEL 1960; VÖLKEL 1961). The social geography orientation in geography teaching, however, did not gain paradigmatic significance until the reform (cf. GEIPEL 1974; BIRKENFELD 1979; KÖCK 1986a, 197), following the corresponding revival of the social geography approach (revival in so far as a social geography approach has long been a characteristic of geographical science, at least as far back as the first third of the 20th century (cf. VIDAL DE LA BLACHE 1911; BUSCH-ZANTNER 1937)). The central statement of the social geography approach consists of the thesis that it is not individuals, but social groups which are the initiators and supporters of spatially relevant and spatially characterizing processes, that is, they generate anthropogenic structures (cf. BOBEK 1948, 47, 53/54; HARTKE 1959, 426; 1970, 109/110; SCHAFFER 1968, 15; RUPPERT/SCHAFFER 1969, 209, 212; DÜRR 1972, 72/73; JASCHKE 1974, 241; MAIER et al. 1977, 26, 44/45). However, in geography teaching the emphasis in social geography was less that on a group classification of spatial structuring (problematic in itself) than on the conception of the basic functions of life. This was all the more important for geography teaching as virtually nothing from the classic stock of human geography had to be given up as a result. For in geographical science, social geography and human geography had often been treated as equivalents from around 1960.

And since the basic functions of life in effect cover and systematize the entire range of statements of human geography, and since these basic functions were considered to be highly suitable for instruction, virtually the entire content of human geography could be integrated into geography teaching by means of this basic functions of life framework. Thus, the social geography approach influenced and determined in an extensive way the topics and contents proposed for curricula in geography, at least until the second half of the seventies (cf., for example, spatial mobility, commuter problems, agro-social problems, problems with foreign workers, third-world issues, etc.), whereas the influence of this approach has considerably decreased since then.

To an extent as a reaction to this extensive and one-sided social geography orientation of geography teaching and the neglect of physical-geographical content caused thereby in the early years after the reform, the course was soon adjusted (cf. KÖCK 1986a, 200). This underlined the necessity of a geo-ecological orientation of geography teaching in order to take into account the growing ecological consciousness of society, to qualify pupils also for an ecologically adequate spatial behaviour, and to contribute towards a re-establishment of ecologically disturbed equilibria on earth or to avoid the development of disturbances of ecological equilibria. At the same time this offered the possibility to prove the vital significance also of the physical-geographical facts and thus to integrate the physical-geographical contents into the instruction under geo-ecological circumstances more intensively than before. Whereas from circa 1968/70 the social-geography approach was the central idea for the content of human geography, from circa 1972/75 the geo-ecological approach or the thinking in ecosystems functioned as the central idea for the instructional treatment of the physical-geographical content (cf. HENDINGER 1977, 6; HAUSMANN 1979, 79/80; BECK 1980, 11/12; JUNG 1980, 12; VOIGT 1980, 15/16, 30-38). This postulates that the physical geofactors, phenomena, elements, etc. of the geosphere can be interrelated to the form of a system's theory by multifarious interactions, thus forming systems of interactions which are in a dynamic equilibrium due to the permanent exchange of matter and energy between and within the systems (NEEF 1970, 236-239; KLINK 1972, 7-9; 1974, 211/212; 1980, 4-7; ELLENBERG 1973, 1-3; LESER 1973, 41).

This approach has commended itself in the didactics of geography as well: Since, due to human influences, many ecosystems are severely damaged and their equilibria have been impaired in such a way that their recuperation seems to be no longer possible on the basis of the ability of the ecosystems to control themselves alone. The consequence for geography teaching has been to try and change educationally the ecological behaviour of man in accordance with the geo-ecological requirements and conditions in order to avoid further damage of natural ecosystems or to make repairs possible. Thus, thinking in ecosystems terms has been generally accepted in geographical teaching and has considerably determined the physical-geography content of geography teaching (cf. HAGEL 1972; 1974; 1976; NOLZEN 1972; HAUBRICH 1975; 1977; HASSE 1976; SCHNEIDER 1977; HENDINGER 1978a; 1978b; JUNG 1980; STEIN 1983). One of the reasons for the wide distribution of the geo-ecological approach, however, was its potential to rehabilitate and reactivate in the curriculum the physical-geography contents neglected before (cf. NOLZEN 1972, 36; BIRKENHAUER 1974a, 32-34; HARD 1974, 70; 1982b, 237-240; HASSE 1976, 14; JUNG 1978, 46; HENDINGER 1981, 33 as well as already HOFFMANN 1968, 454).

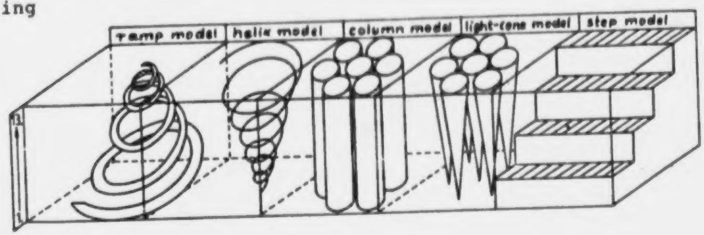
The following cases may serve as examples of such ecologically accentuated instructional contents:
landscape changes due to mining; problems in agriculture due to monocultures, fire clearings, overgrazing; city climate; energy generation and pollution; pollution of waters (rivers, lakes, seas); leisure behaviour and pollution; and many more.

However, one should not forget that the contents which were in fact taught (and probably the qualifications imparted) deviated sometimes more, sometimes less, from those contents required by curricular theory in the framework of geography teaching (cf. in particular the social-geography as well as the geo-ecological subjects). NIEMZ (1984; 1986) especially has identified a wide discrepancy.

4.3. Hierarchic classification of objects and contents

In the didactics of geography, five basic models have been developed in order to arrange the objectives and contents of geography in conceptual frameworks as a means of achieving a staged cognitive development of pupils. These models are the 'ramp' model, the helix model, the column model, the light-cone model and the step model (cf. fig. 1 as well as KÖCK 1986a, 171-176).

Fig. 1: Models of curriculum hierarchies in geography teaching



Source: KÖCK (1986a, 171)

- The ramp model:

The ramp model, sometimes also called the spiral model, was contributed to the discussion by GEIPEL (1969b, 17, 153/154; 1971, 497) who at the same time was also the first explicitly to demand a vertical learning-logical hierarchy promoted by curriculum theory (1968, 43). According to this model, the curriculum is similar to a ramp, in so far as the upward motion is to symbolize the qualitative increase and the curricular motion is to symbolize the quantitative increase in regionally verifiable and available knowledge (this, however, is a contradiction to the circumference of the curricular motions of the ramp decreasing with height).

According to KIRCHBERG (1976, 354) the qualitative increase can be systematized as follows:

schoolyears	Main foci of each stage	Prevalent points of view	Spatial comprehension
5th/6th	basic insights in man-space-relations	immediate, static, descriptive, physiognomic	space as availables space for human groups
7th/8th	analysis of spatially characterizing and spatially changing factors	regional, course-oriented, analytic, genetic	space as interconnected structure
9th/10th	discussion of actual questions and tasks	regional and national, future- and problem-oriented, functional	space as a process field of social and political groups

The quantitative increase is achieved in particular by means of the types of case studies used to exemplify the foci. For the 5th/6th school year, individual pictures and life spaces are proposed, for the 7th/8th school year, regions and provinces are proposed, for the 9th/10th school year, countries are proposed besides regions and provinces. This proposal by KIRCHBERG has particularly gained wide acceptance in curriculum development.

- The helix model:

The demanded hierarchical structure of the curriculum was most often compared to a helix. Since curriculum hierarchy demands a vertical dimension, the three-dimensional helix seems to be a more suitable analogue for the curricular hierarchy than the two-dimensional spiral. According to its inventor *BRUNER (^{3}1973), the basic idea of the helical model is to bring about a hierarchical progression during the different school years within the same objective or content system and, consequently, only to include such objective-content-systems into the curriculum which can be treated at all school levels in a hierarchic manner (HAUBRICH/NOLZEN 1975, 102; RICHTER 1976b, 383/384; KIRCHBERG 1977b, 29; 1980a, 258; HAUBRICH et al. ^{3}1984, 84-91). The criteria to construct this helical hierarchy are in particular the degree of complexity (in the cognitive field of learning) and the degree of abstraction (in the instrumental field of learning).

However, this helical model was not only applied between objective and content systems, but also within these systems, for example by HENDINGER (1973, 90/91) and HAHN (1974, 404-407). Here too, the hierarchical criteria are increasing complexity and abstractness so that HAHN proposes (adequate to the age of pupils) at first elements, then structures, then complex structures, afterwards processes and finally models.

- **The column model:**

The column model (with its strong science-orientation) was originally developed by BAUER (1976, 63); it depicts the vertical and hierarchical structure of the curriculum more aptly as the models discussed above. Here, in the exact sense of the curricular hierarchy, each column represents a field of learning which is then opened up with increasing intensity from the 5th to the 13th school year. The hierarchization is achieved by examining

- in the lower forms (1st platform) elements and basic abilities,
- in the middle forms (2nd platform) systematic and causal relations,
- in the higher forms (3rd platform) functional combined action so that higher layers and more complex structures are increasingly opened up.

Among others, HOFFMANN (1970), RICHTER (1976a) and BÖRSCH/LORENZ (1977) have made proposals as regards the contents of such columns. Although the column model depicts the basic idea of curricular hierarchy, the hierarchic structuring of the objective-content system, the extension of the circumference of the cognitive system coinciding with its further development are, however, not depicted by means of the columns since their diameters remain the same instead of increasing from one school level to the next.

- The light-cone model:

The main difference between the column and the light-cone model is the widening of the diameter from one level to the next. It was proposed by KÖCK (1979, 262; 1980, 50-60). In his model the extension of the objective-content system during school time is compared to the widening beams of light when projected in a vertical direction, by this symbolizing the vertical correlation within the corresponding field of learning in a better way, because the individual beams shine, as it were, through the entire learning continuum from the primary level (or may be even from preschool age) up to the secondary level II (or until post-school age).

The general objective, that is competence of spatial behaviour, appears at the highest-rank level of the light-cone. On the next level below, this objective is differentiated by using single light-cones corresponding with the functions of life; within each single light-cone (i.e. each single objective-content system) the increase in the spatial structural complexity of the studied spatial examples during school time is the hierarchical criterion.

- The step model:

In contrast to the four models discussed above, the roots of the step model go back to the time before the reform. This model, however, was reactivated for reformed geography teaching especially by BIRKENHAUER et al. (1978) and the VERBAND DEUTSCHER SCHULGEOGRAPHEN (1973; 1975). In BIRKENHAUER et al. in particular, the appropriate objective-content systems to be developed are classified in the following manner:

- at the primary level: elements;
- in the 5th and 6th school year: structures, with respect to simple spatial order;
- at the secondary level I: complex spatial structures and orders;
- at the secondary level II: the process- and model-oriented spatial reflection (338, 341/342).

As the hierarchical models presented here show the problem can generally be considered to be conceptually solved, though its operationalization has not been successful so far.

This can be seen with particular clarity by using the criterion 'degree of complexity'. There is unanimous agreement that the degree of complexity is the most important criterion in determining a hierarchy of objectives and contents of geography teaching (cf. SCHWELGER 1968, 4; SCHULTZE 1970, 8; BIRKENHAUER 1972b, 60; [4]1975, I, 118; HENDINGER 1973, 89/90; HAHN 1974, 402/403; VERBAND DEUTSCHER SCHULGEOGRAPHEN 1975, 350; BAUER 1976, 35; RICHTER 1976a, 236; BASISLEHRPLAN 1980, 549; KIRCHBERG 1980a, 258; KÖCK 1980, 50/51; KIRCHBERG/RICHTER 1982, 20, 34; JAHN/KISTLER 1983, 264). And this is all the more true as it takes into account the general law of psychological development dealing with the increasing complexity in developing attitudes and dispositions (OERTER [17]1977, 272). In addition there are numerous proposals as how to classify the complexity, such as these of SCHULTZE (1970, 8), HENDINGER (1973, 90/91), HAHN (1974, 406/407), BIRKENHAUER (1975, 53/54), VERBAND DEUTSCHER SCHULGEOGRAPHEN (1975, 352/353), KIRCHBERG (1976, 354), RICHTER (1976a, 237-240), BIRKENHAUER et al. (1978, 342), KÖCK (1980, 59), JAHN/KISTLER (1983, 266). Some of these proposals have already been mentioned while dealing with hierarchical curricular models. The proposals by SCHULTZE and KÖCK may be added to that list:

- SCHULTZE (1970, 8):

5th/6th school year:	simple facts of nature and simple forms of mastery,
7th/8th school year:	large natural orders,
9th/10th school year:	spatial structures of modern society and economy;

- KÖCK (1980, 59):
  1st/4th school year: microchora = spaces of local to regional size (within the spatial type),
  5th/6th school year: mesochora = super-regional to national size (within the spatial type),
  7th/8th school year: macrochora = spaces of subcontinental, continental and transcontinental size (within the spatial type),
  9th/10th school year: megachora = the corresponding spatial types of global and transglobal scope,
  11th/13th school year: microchora to megachora, but with a thematic specialization.

It has to be stated, however, that until 1984 there was no operational definition of complexity or an operationalization of the degree of complexity in geography didactics. Up to that point, there was rather a pre-operational, diffuse, approximate comprehension of 'simple' and 'complex'.

The first effort to operationalize object-complexity and the degree of object-complexity was undertaken by KÖCK (1984a) (later taken up by KAMINSKE 1985). Here, complexity of an object is defined in a geographical relation by the number of laws describing ("explicandum"- complexity) and explaining ("explicans"- complexity) the chorological structure of a spatial order or a terrestrial system. Consequently, the greater the complexity, the more laws of the chorological structure of a terrestrial system are contained both in the explicandum and the explicans.

This operational definition of complexity, however, refers to object-complexity only and not at all to subject-complexity (the cognitive complexity of the subject being learned). To determine this is certainly of equal curricular importance, but the problem is still unsolved.

At present, syllabi are structured only to a certain degree and in a narrow sense of hierarchy at that (cf. HAUBRICH 1979a; 1979b; 1980; KIRCHBERG 1980; KAMINSKE 1985).

The reason is that hierarchical operationalization has not been undertaken so far.

4.4. Procedures and criteria to determine objectives and contents

The procedures to determine objectives and contents of geography teaching have not yet found broader attention in the didactics of geography. Therefore, the corresponding state of development is not satisfying. At the same time, the procedures according to which the respective curricular commissions in the Länder decide about objectives and contents are not known; they usually do not publish any reports. There are at best three procedures which seem to be worth mentioning. These are 'deduction', 'expert questioning' and the 'matrix approach' (cf. also KÖCK 1986a, 162-165).

- Deduction:

In the initial phase of the reform period, deduction was particularly important (cf. BIRKENHAUER 1972a; 1973; HAUBRICH 1972). Analogous to similar procedures in general didactics (e.g. *ROBINSOHN 1967; *ISENEGGER 1972; *MÖLLER 1973) and especially to the three-level model by *ROBINSOHN (situations in life -> qualifications -> curricular elements), it was believed that one could deduce from the 'situations of life' first the qualifications (objectives) required to master these situations, and to deduce afterwards from these qualifications the curricular elements (contents) suitable to impart these qualifications. As the discussion was continued (cf. *MEYER/OESTREICH 1973; KÖCK 1980, 37-40), the logical problems of deductive determinations of objectives and contents, which were supposed to be insurmountable, resulted for a long time in deduction being marginalized in curricular decision-making. Nevertheless, a change seems to be in the offing. Based on recent methodological papers in education (above all *KÖNIG 1975; *TREML 1978; *ZECHA 1978; 1979; *ZEDLER 1981), KÖCK (1986b; 1986c; 1987) has shown that deductive decision processes are possible in the didactics of geography.

- Expert questioning:

In the geographical determination of objectives and contents and especially in the framework of the development of the 'RCFP' (see section 3), the so-called 'expert questioning' was important as another procedure. This procedure was initiated by *ROBINSOHN (1967, 48-54) and accepted and recommended in the "structural plan for education" by the *DEUTSCHER BILDUNGSRAT (1970, 63, 66/67). According to *ROBINSOHN, such expert groups should include scientists, representatives of the most important applied fields of study, and representatives of the human sciences (among others education). GEIPEL sought to apply this system to geography in school at the conference at Tutzing in 1971 (cf. GEIPEL ed. 1971). The participants as well as the experts came from different disciplines, such as regional politics, community politics, developmental politics, city construction, local and regional planning, spatial research and land planning, ecology/landscape planning, communications, regional economic politics as well as geogaphy (school and university). These experts were asked to present spatially relevant situations as well as suitable curricular elements. The results of this conference, in connection with other preparatory works of different teams of the VERBAND DEUTSCHER SCHULGEOGRAPHEN, were the basis for the didactic, organizational and content structure of the 'RCFP'.

- The matrix approach:

Despite a special symposium on this approach (cf. KROSS ed. 1979), it did not succeed as a procedure for decision-making about contents and objectives. The approach went back to *BLANKERTZ and was developed "as early as 1969 in contradiction to *ROBINSOHN's curricular conception" (SCHRAND 1978, 336; 1979, 10). The basic idea and the procedural mode may be outlined as follows (cf. *BLANKERTZ 1975, 206; SCHRAND 1978, 336/337; 1979, 10/11; 1981, 13): The starting point is the claim that for all decisions about contents and objectives, scientific, social and pupil-related aspects have to be taken into account. Viable connections needed to be established between these three components. Thus major political and pedagogic intentions were converted into regulative criteria so that the basic facts of an object field could be examined by these criteria to discover their "educative intent" (*BLANKERTZ 1975, 206). A matrix constructed along these or similar lines was called a 'matrix of didactic structure'. Examples of such matrices for geography didactics were presented, among others, by BIRKENHAUER (1975; 1979), RHODE-JÜCHTERN (1977; 1979; 1982) and OESTREICH (1979). As an illustration, the examaple by OESTREICH is shown in the following figure 2:

interests with direct cognition *means*		*Technical, value-free, teleological-rational*	*Practical, ideological*	*Emancipatory, critical*
evaluation	*situation* ↓ *legitimation* ↑ *disposition*	*meeting of requirements* *articulation of existential requirements and interests*	*availability of space* *causes and development of spatial and social disparities*	*growth conflicts in disparate spaces* *limitation of growth as a means of spatial action orientation*
realization	*situation* ↓ *legitimation* ↑ *organization*	*modifiability of space* *optimization of opening-up processes*	*finite nature of natural resources* *consensus in spatial activities of social interest*	*optimal capacity of space* *ecological and social limits of spatial opening-up*
utilization	*situation* ↓ *legitimation* ↑ *participation*	*control of spatial behaviour* *optimization of planning processes*	*minimization of spatial conflicts* *solving of conflicts by planning processes*	*competence in spatial and planning participation* *criticism as action*

Fig. 2: Example of a matrix for geography didactics
Source: OESTREICH (1979, 60)

OESTREICH used societal 'interests' (or basic orientations), as a means of organizing knowledge.

According to this school of thinking (strongly influenced by the philosophy of *HABERMAS) the main interests are "technical", "practical" and "emancipatory". These three 'interests' are then matched with the three ways of a geographical system achievement, i.e. "evaluation", "realization" and "utilization", and their application to or projection on spatial facts and processes. OESTREICH obtained a set of "criteria for spatially competent action" as well as a basis for the "comprehension of the mastering of life in and with space" (58-61).

Irrespectively of the fact that no 'patent procedure' to determine objectives and contents has been found to date and everybody continues to stick to "usual decisionism" (*BITTLINGER 1978, 453), the statement holds that procedures as such do not achieve any legitimation of a curriculum as such, or at most the legitimation of the procedures only. Nevertheless they do lay open the intentions in the making of a curriculum. Decisions about the objectives and contents have rather to go back to the criteria on which the procedure is based. The legitimation and the adequacy of these criteria can then be discussed (cf. *BITTLINGER 1978, 459-462 as well as the matrix approach). The question arises: which of the criteria can be used in the framework of curriculum decision-making (cf. *DIENER 1978, 149). According to the following authors(cf. among others BAYER 1968; BAUER 1969, 463; 1976, 29-32; ERNST 1970, 187-189; 1971a, 3; 1971b, 108; HENDINGER 1970, 12; BIRKENHAUER 1972a, 4; 1975, 51-53; BRUCKER/HAUSMANN 1972, 37/38; HAHN 1974, 403; BÖHN 1976, 600/601; JANDER 1976, 167-169; HAUBRICH 1977, 188-192; HOFFMANN 1978a, 30; SCHRAND 1978, 336; 1979, 10; HAUBRICH et al. ^{3}1984, 342-367; BASISLEHRPLAN 1980, 10, 12, 14, 17; ENGELHARDT 1980, 23-32; KÖCK 1980, 39, 56, 61, 66; 1986a, 165-167) the main priorities in determining a geographical syllabus should be the following ones:

- **Relevance for life:**

  The objectives and contents have to help the pupils successfully to organize present and future private and social situations in life.

- **Spatial reference:**

  Geography teaching is involved wherever these have a spatial (spatially structural) dimension.

- **Subject adequacy:**

  Objectives relevant for life and space have to be framed with reference to pupil (and subject variables) such as developmental and learning psychology, socioculture, the specific school situation, the abilities as well as the interests of the respective learning subject, etc.

- **Significance of subject-matter:**

  The subject matter chosen as illustrative material must be worth while in relation to the respective objective.

- **Special scientific significance:**

  Such spatial examples are to be taken into account which are important for the science of geography (and the associated spatial sciences) and which are especially informative as regards to the specific categories and structures of the subject.

- **Global reference**

  The objectives and contents have to show a sufficient horizontal range and diversity, thus enabling the establishment of global orientation and order systems.

- **Exemplary significance:**

  The imparting of transferable dispositions of spatial behaviour is to be realized only if the respective spatial examples themselves are transferable. Moreover, their range should be as large as possible (e.g. serving for any similar individuals, representative of an entire spatial type, rich in content as regards general spatial structures, laws, etc.).

- **Problem orientation:**

  The objectives and contents have to be sufficiently oriented towards problems in order to arouse the pupils' interest.

- **Operationality:**

  Objectives and contents have to be framed in such a way that they can be implemented in instructional processes.

- **Methodological productivity:**

  The objectives themselves as well as the respective spatial examples should be suitable to serve in the imparting, application and training of procedures, methods and working techniques, because such abilities are useful for each individual in order to open up independent ways of his or her own to gain new knowledge of the world and its problems.

Such criteria seem to be of the greatest importance, both for curricular planning, and especially for the everyday decisions of the teacher about objectives and contents. On the one hand, the local and regional conditions and peculiarities as well as the wishes, interests and requirements of the pupils are of a special importance for the teacher's everyday decisions. On the other hand, the general interest of the public have to be taken into account. Therefore syllabi can only be decided on a general and high level. They should, however, not be formulated in a rigid 'teacher proof' way. In this sense, the conception of the 'open' or 'semi-open' curriculum has achieved a firm place in discussions about and in real terms in the curriculum (cf. *BRINKMANN ed. 1975; HENNINGS 1977; RHODE-JÜCHTERN 1978; HENDINGER 1980, 95, 100, 103).

5. The reform of the reform?

Since the beginning of the reform, qualitative differences can be identified, on the one hand, concerning the attitude towards objectives and hierarchy and, on the other, towards content.

In relation to the dimensions 'objectives' and 'hierarchy' it may well be stated that all the controversial discussions, the deficiencies, problems, etc. noticed during and after the reform (cf. DAUM 1980) did not result in the querying of the reform objectives as such. The dimension 'objectives' will continue to have validity even if some of the detailed learning objectives are not effective in practice (cf. HAVELBERG 1986a, 78). More importance should be attached to whether such behavioural and action objectives are practically attainable and effective (cf. SCHULTZE 1979, 4; 1980, 183; DAUM 1980, 44; ENGELHARD 1981). To achieve a hierarchically structured curriculum seems an idea only, at least at the moment. As section 4.3. showed, it is as yet the least satisfyingly solved problem of curricular reform.

The dimension 'contents' showed a different development. Here, from the beginning of the reform and parallel to it, a 'regional' counter-movement could be observed which was not characterized so much by traditional regional geography, but rather by a regional orientation. Although this countermovement could not prevent the systematic orientation of the curriculum, it has brought about, especially by the intensification within the last few years, a lessening of the rigidities of systematic geography, and supports many regional elements within a broader systematic orientation (cf. MITTELSTÄDT 1983; NIEMZ 1984; 1986; SPERLING 1986). Consequently, one can, partly at least, speak about a reform of the reform, gradually incorporating broader regional contexts.

The following deficiencies for which the systematic approach (tied to exemplary case studies) is blamed, can be mentioned as reasons:

- The thematically selective view of space of systematic geography results in a breaking down of vertically integrated systems and reduces them to just one layer only.

- The case study treatment prevents the knowledge of a spatial continuum.
- The combination of systematic geography and exemplary treatment results in the neglect of countries and regions.

However, apart from these deficiencies some other external factors have contributed to change: for example,
- in the didactics of geography in the universities there has been a strong tendency to reinforce regional orientation.
- parents did not understand the concept of the reformed geography instruction, perhaps because this concept was not sufficiently explained to them.
- in learning 'capes and bays' there were many complaints about real or potential gaps in the knowledge of the pupils. This was made worse because such knowledge serves as the 'peephole' for the parents and for the public into the efficiency of geographical instruction. Some geographers asserted the real or potential societal need of regional knowledge
- and many more.

(Cf. among others: BÄUERLE 1970; BIRKENHAUER 1970; 1981b; 1982b; 1983; 1984; KRÜGER 1970; FISCHER/HILT 1974; BÖHN 1976; 1980; GINZEL 1976; FUCHS 1977; ITTERMANN 1977; FICK 1971; 1976; 1978; 1979; KIRCHBERG 1977b; RICHTER 1977; FRIESE 1978; BRUCKER 1980; SCHÖNBACH 1982 and the summarizing representation in KÖCK 1986a, 158-162, 188-192).

In parallel with the reform, and even more after its accomplishment, a whole string of notions was proposed to remedy these and other deficiencies for which the systematically oriented geography teaching was blamed, such as the following:
- treatment of large spaces (BÄUERLE 1970);
- view of all factors involved (KRÜGER 1970);
- regionally-oriented geography (SCHÖNBACH 1970);
- problem-oriented regional geography (BIRKENHAUER 1970; 1980; 1982b);
- categorical regional geography (FICK 1971; 1976; 1978);
- regional system analysis (BAUER 1976, 120-125; HAUBRICH 1978);
- integrated regional and systematic-geography points of tem analysis (BAUER 1976, 120-125; HAUBRICH 1978);

- integrated regional and systematic-geography points of view (STEIN 1978);
- systematic geography in the spatial context along a 'regional thread' (STEIN 1978; NEWIG et al. 1983; 1984; NEWIG 1986);
- representative countries (BIRKENHAUER 1982b);
- cultural continents (NEWIG et al. 1983; 1984; NEWIG 1986);
- transformed regional geography (BIRKENHAUER 1982b; similarly already 1974).

(Cf. as well the summarizing representation in KÖCK 1986a, 188-192). KÖCK (1986a, 190-192) has shown that arguments given in favour of regional geography teaching are not intended to bring about a return to traditional regional geography teaching and, for the most part, do not intend this. He moreover showed that the intentiones of these concepts can equally be realized in an approach that combines systematic and exemplary case studies. The view that the spatial continuum of the earth can be organized within a teaching of geography that is orientated on both systematic geography and the case study approach was uttered by the following writers: FUCHS(1977; 1983), KIRCHBERG (1977b; 1978; 1980b; 1984), RICHTER (1977), GEIBERT (1979), BIRKENHAUER (1981b), HAHN (1983), HAUBRICH (1984b), KAMINSKE (1984), KÖCK (1984b) and SCHÖNBACH (1984). Here, central conceptions are, according to KIRCHBERG, FUCHS and BIRKENHAUER, above all spatial orientation matrices and order systems, according to HAHN orientation patterns, according to KÖCK thinking in spatial relations, systems, structures, models, types and categories.

Altogether, the main curricular tendency starting in the middle of the seventies and continuing into the eighties, was a regional reorientation, (although with differences in intensity both in different parts of the country and as between writers). As a means to achieve this purpose, the treatment of spatial examples in the curricula is no longer left as open as it was the case in the seventies. Certain continental and natural regions or even cultural realms (cf. BASISLEHRPLAN 1980; KIRCHBERG 1980a, 262/263; 1981), have become assigned since then to certain school years. Such practice may be incompatible with the basic ideas of the systematic and case study approach, at least if one compares it with the pseudo-exemplary procedures of the fifties and it with the pseudo-exemplary procedures of the fifties and sixties. Finally, the problem remains of how ot grade learning contents according to the insights gained by the psychology of child development (cf. PIAGET and others) - a wide field, still open.

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Recent changes in systematic and regional geography in West German schools

The traditional dualism in scientific geography - systematic geography versus regional geography (SCHMITHENNER 1970; STEWIG 1979b,c; STORKEBAUM 1966/78; WINKLER 1975) - underpins but is not the subject of this article. It is clear that similar developments have taken place both in university and school geography since the 1960s, but still some questions remain obscure:

- Is the dualism in effect the same problem at two different levels?
- Is the problem a separate one at the two levels?
- Does the problem at the two levels in this case effect the other or depend on the other?

General development

The discussion at university level culminated in the demand of the students at the German Geography Congress in Kiel in 1969 to abolish "Länderkunde" on the grounds that it was unscientific. This demand led to a flood of comments, statements and publications (BAHRENBERG 1979, 1986; DOERRENHAUS 1971; EISEL 1970; GERLING 1973, KILCHENMANN 1973; OBERBECK 1971; SCHMIEDER 1969; SCHOELLER 1978; STEWIG 1979a,b; WIRTH 1970,1978, 1979). The changes in school geography were (at first) much calmer, although the discussion was not less critical - since the changes of the 70s had been generated in the 50s (KOECK 1977).

In addition to many articles (e.g. BAEUERLE 1970b; HOFFMANN 1970; KREMB 1975; SCHOENBACH 1970), there is almost no handbook on the teaching of geography which does not report on the exciting changes in school geography from the former country-by-country teaching to the present teaching based on systematic geography (BAUER 1976a; BAUER & HAUSMANN 1976; BIRKENHAUER 1975b; BOEHN 1985; GERLACH 1976; HAUBRICH, BRUCKER, ENGELHARD, HAUSMANN, KIRCHBERG & RICHTER 1983; KREUZER 1980; KREUZER, BAUER & HAUSMANN 1974; SCHREIBER 1981; SCHRETTENBRUNNER 1981; SCHULTZE 1978b). Short but concise reports on these changes are given by GERLACH (1977), SCHRETTENBRUNNER (1981) and SCHULTZE (1979), and fuller accounts by BIRKENHAUER & HAUBRICH (1971), CLOSS & SPERLING (1977), HAUBRICH (1979, 1980, 1982b), HENDINGER (1973, 1978, 1980, 1981), HENDINGER & SCHRAND (1981), KIRCHBERG (1976), MEYER & OESTREICH (1973), RICHTER (1980), SCHRAND (1981) and SCHULTZE (1981). Changes in the text books are a mirror of changes in curricula, both analyzed by HARD (1973/74, 1978a,b). The new school atlases also reflect these changes (AURADA 1981).

Changes in the basis of school geography

Significant changes in school geography had already begun in the 50s with the discussion about the so-called exemplary principle in geography teaching (GERNER 1970; KNUEBEL 1957, 1960) and other - mostly methodical - problems. The most important contributions to these problems are to be found in the handbooks which were edited by ENGEL (1976) and SCHULTZE (1978, first published in 1971). At last the discussions culminated in SCHULTZE's demand "Systematic geography instead of 'Länderkunde'!" (1970). Different aims and objectives of the new school geography were postulated, e.g. by HENDINGER (1970). The majority of the reactions agreed with the new developments, but some were sceptical (e.g. BAEUERLE 1970b), and others (e.g. BIRKENHAUER 1970; WIRTH 1970) did not believe that the new ways and models in school geography could solve the problems under discussion.

GEIPEL and others initiated an accompanying research offensive which drew its fundamental ideas from the US-'High School Geography Project' (HSGP), and was adapted to the specific problems of German school geography, in the 'Research Project for a space science curriculum' ('Raumwissenschaftliches Curriculum-Forschungsprojekt' = RCFP); this research project itself had some innovating effect (AMBROSE 1975; Forschungsstab 1978; GEIPEL 1971, 1975a,b,c; JUNGFER 1976; KNAUS 1975; WALFORD 1973). Several groups all over West Germany planned and developed, tested, evaluated, and revised more than 20 teaching units for pupils of different ages, based on the aims and objectives of the 'new' geography (GEIPEL 1978; JUNGFER 1975, 1978); nine of them were published in the years 1975 to 1978 (RCFP - Lenkungsausschuss 1974, 1975, 1976).

The new school geography

The general aim of the new school geography was to contribute to the solution of the problems of mankind's existence and environment. The pupils should acquire knowledge, and be able to analyse and to understand these problems in order to develop the skills needed to solve them. The aims and objectives of the new school geography were mostly based on social geography (GEIPEL 1974/76; RICHTER, SCHULTZE & SCHRETTENBRUNNER 1971; Schrettenbrunner 1974a,b; WENZEL

1978), especially on such fundamental categories of human living and existence as 'living in a community', 'living at a place', 'working', 'supplying', 'education', 'recreation' and 'traffic, transport & communication' (BIRKENHAUER 1974).

These objectives, mostly derived from human geography, were supplemented by linking concepts drawn from the physical environment and geo-ecology. They corresponded with regional examples dispersed all over the world. But it was argued that there should always be the possibility of comparing these places with Germany and the pupils' home area.

Examples: In the 5th and 6th form (age of 10-11) you will find themes of farming in different landscapes in Germany as well as in North or South Europe or in different climatic regions overseas. Planning or spending holidays is demonstrated by regional examples at the North Sea coast and in the Alps as well as in Kenya or at the Mediterranean Sea. Themes of physical geography are normally to be found in the 7th form (age of 12), especially those of geomorphology and climatology with an emphasis on the "geography of hazards".

Planning problems, especially of the urban environment and of rural regions, and problems of the developing countries dominate in the curricula of the 8th-10th forms (age of 13-15). Similar problems are to be found (and deepened) in higher forms (16 +), with additional themes of environmental protection and ecology as well as those of the geographical comparison of countries with different social and political systems.

The latest changes

The development of school geography into a modern subject within the social sciences domain was accompanied by different points of criticism. It may be that geography teachers sometimes ventured into exotic and strange case studies and pseudo-scientific discussions with little or no correspondence to mankind's problems. Others criticised the methods and models which related well to scientific research but had little regard for pupils' interests.

The most forcible reactions came from the public, including the pupils' parents. They missed the former regional coverage as well as the knowledge of capes and bays in the younger generation. But the lack of such knowledge was not a consequence of the new school geography, for there had been no scientifically based system of teaching topographical knowledge in the former country-by-country school geography.

Nevertheless more knowledge about the home region, about Germany and Europe was demanded, perhaps as a consequence of social and political changes in West Germany which gave more emphasis to the renaissance of "Heimat". One of the many attempts to combine the aims and objectives of the new school geography - based on systematic geography - with a system of landscapes and regions, of countries and continents, was the contribution of NEWIG, REINHARDT & FISCHER (1983) which led to an intense and extended discussion among teachers at schools as well as at universities in the early 80s (DAUM & SCHMIDT-WULFFEN 1983; HAUBRICH 1983; JAHN & KISTLER 1983; KIRCHBERG 1983; NEWIG, FISCHER & REINHARDT 1984).

The issue of wanting more regional coverage veiled another, but less discussed problem: the one of regional geography itself. Whereas there are no agreed empirical and psychological imperatives in deciding on which geographical topics to choose and at what stage (for example that the 8th form should study South America), there are still the problems of how - a complex geographical region can be taught at the different levels and in the different forms of the school - the results of teaching regional geography can be an advantage for geographical knowledge in general and for the better understanding of the world and its problems,- this knowledge can promote the attitude of being qualified to help to solve these problems (BAUER 1976c; BIRKENHAUER, SPERLING et al 1980; HABRICH 1978; HAUSMANN 1985; HINGST 1981).

BOEHN (1974/75) made some suggestions and BIRKENHAUER (1970, 1981a,b, 1983) developed a system of teaching regional geography in school. But there is still no discussion of the development of curricula concerning regional geography. In general the discussion has become calmer and calmer - an almost disquieting calmness.

An attempted summary

The discussion of changes in systematic and regional geography in school inevitably represents no more than a short report on the developments of the last 20 years.

There is not the space to analyse the whole situation and to give a full impression of the different influences affecting it. At least three stages in the development can be distinguished (see graphical illustration):

The route from the general discussion of the reform of education in the 60s (ROBINSOHN 1975, first published in 1967) and the discussion within the different interest groups among geographers (BIRKENHAUER 1974/76, 1986a; FICK 1978; HAUBRICH 1977; HAVELBERG 1986; HENDINGER, HOFFMANN & KREIBICH 1981b), as far as the postulate of leaving "Länderkunde" outside the geographical discipline (in the late 60s and early 70s) did not at once lead, as might have been thought, to new curricula in school geography, but first to new pupils' text books (WENZEL 1978).

Many of those who had participated in the discussion about new aims and objectives in school geography showed their involvement as authors of new text books. The publishers took their chances, thus their quick reaction helped to establish the new geography and to disseminate the new ideas to every teacher (1st generation of new textbooks).

After some delay, the Ministries of Education (of the 11 "Länder" of the Federal Republic of Germany) set up committees in order to generate official new curricula. These were, however, little more than a mirror of what already had been reality in text books and teaching practice. Up to that time the geography syllabi of all the "Länder" were almost identical. But then the curricula changed more and more to 'Land'-specific variations; and variations again were necessary for the different types of schools. The "basic geography curriculum" (Basislehrplan Geographie), which had been worked out by the central organization of West German geographers in the late 70s, was an attempt to find a new universal equilibrium, with not much impact, however (Zentralverband 1980). That is why a 2nd generation of text books had to be brought on to the market and, consequently, these text books began to differ very much from each other, not only from 'Land'to "Land", but also from school type to school type even within the same "Land".

At last public and parental criticism of the pupils' missing knowledge of capes and bays and the discussion about more regional coverage of the problem of systematic geography led to the 3rd generation of text books in which aims and objectives of the new school geography were combined with certain regions or continents of the world. In the mid-1980s, for example, text books of the 5th form (age of 10), regional reference to Germany is to be found together with exercises on capes and bays.

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Media in geography teaching

0. Survey of the Period under Review

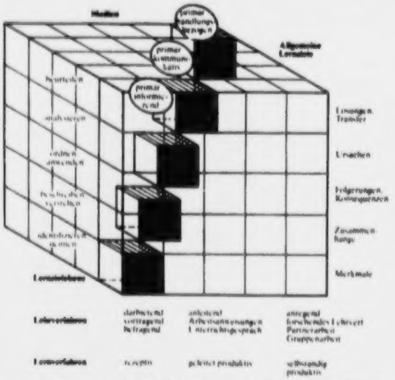
BIRKENHAUER (in this book) summarizes research in geography didactics undertaken in the Federal Republic of Germany in the last few years. He has also given reasons for the fact why 1975-1984 is a useful period to look back at. Indeed, for media also, the 1975-84 period represents a specific phase of development:

- At the end of the sixties many ideas in school geography generally accepted up to that time were questioned (cf. KÖCK in this book). Amongst others, a teaching orientated on systematic geography replaced the principle 'from the near to the far'. This new type of teaching made necessary a revision of the use of corresponding media (cf. FICK 1976; on the changed objectives in geography teaching; BRUCKER 1975: on the changed role of the media in a learning-objective orientated geography teaching; BRUCKER 1976d: on media education in geography teaching).
- Due to the heavy orientation on educational objectives which occurred at the same time as the expansion of mass media, the principles of presenting the subject matter to the pupils had to be reconsidered also in geography - here even more than in other school subjects. (As far as the use in geography teaching was concerned, there were only some special investigations for particular media: cf. KOCH 1977; SCHRETTENBRUNNER 1982).
- Important questions were settled only at the beginning of the seventies; for example, the question which conditions media have to fulfil in order to initiate learning processes (of differently conditioned pupils) and to support these processes (amongst others DALLMANN/PREIBUSCH* 1974; DICHANZ/DICHANZ* 1974; HEIDT* 1975; P. KÖCK* 1974; WITTERN* 1975).

(Author's names with an asterisk mean non-geographical ones.)

- Most of the media which had a traditional place in geography teaching had to be re-evaluated in their function (cf. amongst others W. ENGELHARDT 1976; GEIBERT 1976; HAUBRICH 1978a) with regard to general ideas about teaching.

Thus, in the middle of the seventies, as a necessary consequence of the re-orientation of geography teaching the view became general that media should be used merely for illustrative purposes but for pupils to interact with them and gain knowledge from them in using them. This makes BIRKENHAUER's conclusion, which he drew at the beginning of the report period (1976), comprehensible. At that time, as he pointed out, media research in geography didactics was nothing but a "blank spot on the map of didactics". Unfortunately, only very few people engaged productively in research on the 'new' use of media in the period following. The works of BÜRVENICH (1977: on school television), M. GEIGER (1978: on aerial pictures), KUROWSKY (1980: on films), STONJEK (1980b: on school radio), BRUCKER (1982a: on satellite pictures), THIELE (1984: on atlases), FUCHS (1985: on newspapers) and others are obviously rather isolated, though fundamental. However, as a result of some symposia on the didactics of geography, the objectives of future research became clarified in the middle of the eighties (cf. HAUBRICH, ed. 1984; STONJEK, ed. 1985). New ways had to be found which enable the combination of different learning objectives with different teaching and learning procedures using different media. GROSS (1985) gave an outline of an underpinning theory and presented the following model.


Medien
primär darstellungsbezogen
primär kommunikativ
primär informativ
Allgemeine Lernziele
beurteilen
analysieren
ordnen anwenden
beschreiben verstehen
identifizieren nennen
Lernzielebenen
Lösungen Transfer
Ursachen
Folgerungen Konsequenzen
Zusammenhänge
Merkmale
Lehrverfahren
darbietend vortragend befragend
anleitend Arbeitsanweisungen Unterrichtsgespräch
anregend forschendes Lehren Partnerarbeit Gruppenarbeit
Lernverfahren
rezeptiv
gelenkt produktiv
selbständig produktiv

(from GROSS 1985, p.581)

Taxonomie: Matrix zur Strukturierung von a) Allgemeinen und speziellen Lernzielen, b) Lehr- und Lernverfahren, c) Medien

Up to this time, however, there has been a lack of empirical investigations. This is all the more important because of the paradoxical situation (as KETZER explained in 1981) that curriculum development (cf. KÖCK in this book) considerably hindered the production of media for geography teaching though it expressly demanded the use of media.

The reason is that each Land has its own geography curriculum by now (cf. KÖCK in this book) which makes national production of media very difficult. Producers therefore tend to make media very general (cf. KETZER 1977a) in order to make sure that they can be used in as many Länder as possible and comply with their varying curricula. Since the middle of the seventies, there has been a great increase in school year-related and media-assisted instruction proposals (e.g. KIRSCHNER 1985) as well as advice for several school years on the use of certain teaching media (e.g. K. ENGELHARD & al., in BGR, 7th year, volume 4, 1977). However, there is a lack of investigation on how far learning success was enhanced by the use of media. In many publications, therefore, many of which are mentioned in this paper, the true functions of media are emphasized, i.e. to be carriers of information, supporters of communication and interaction processes.

Asisunderstandable from the tradition ofour subject, publications on the use of maps, atlases and globes in geography teaching come first with about 25% followed by those on the use of films in geography teaching (approx. 12%). The multitude of media-assisted teaching proposals and teaching models was already criticized by PLEINER (1979), formulating basic consideration on the use of media (similar to PLEINER 1982), and by HAVELBERG (1980) who demanded to orientate the use of media on learning operations. Earlier on BRUCKER (1976a), GRAU (1974; 1976a), HILLENBRAND (1980) andGRUEM (1982) had demanded a thorough instruction concerning the use of media in university teaching.

With the surveys on the use of media in handbooks, the efforts of the authors and editors were, among others, dedicated to the task of systematizing media sufficiently for the requirements of geography didactics: A. SCHMIDT (^{5}1976) spoke of media as "educational means" and subdivided them in two classes: one referring to the subject (globe, map, section, sandbox, ...) and in those not belonging to the subject (pictures, texts, numbers). EBINGER (^{3}1976) distinguished between working and representational means.

HAVELBERG (1980) - following BRUNER - subdivided them into such of action, of observation and of symbolic value.

JANDER/SCHRAMKE/WENZEL (eds. 1982) gave very short surveys on individual media sectors and a critical article on 'media' (SCHRAMKE 1982). BIRKENHAUER (^{5}1980) and FICK (1980) prefer to speak of media as "working means". BIRKENHAUER was the first to distinguish between working means of direct encounter (excursion, film, picture ...) and indirect abstract encounter (map, number, diagram ...). FICK improved this categorisation. It is his division that shall be followed later on in this paper.

Though very formal, the classification of media into personal and apersonal ones by BRUCKER (1975) has achieved the greatest dissemination (cf. KOCH/WEINREUTER 1981; EICHLER 1982 and others). Apersonal media are again subdivided into technical and non-technical. The technical media are, for their part, divided into auditive, visual and audiovisual.

The division used by DALE* (1954) based on psychological aspects and the degree of abstractness ("cone of experience") was not so successful. The most comprehensive representation of media in geography teaching was recently published by BRUCKER (ed. 1986). It is orientated "at the nature of teaching media: picture, number, map and word as well as concept, film. Three-dimensional figures belong to the most important information carriers in geography teaching" (BRUCKER ed., 1986:2). These media in the order given are then dealt with in 34 chapters by 21 authors.

The following paper on the whole follows the division of media by FICK (1980) with some additions that have become necessary since then. These additions are similar to BRUCKER's (ed. 1986) *). Some problems occurred when some media had to be assigned (e.g. 'aerial pictures film', 'abstract maps with numbers').

To the present author the division proposed by FICK (1980) is considerably more useful for the purposes of geography didactics since it tries to organize media according to the degree of direct encounter they make possible and according to the degree of their abstractness. BIRKENHAUER (^{5}1980) had already followed this scheme. More bibliographical references can be found in SPERLING (1981), concerning the literature up to (1979/80), and BRUCKER (ed. 1986).

It was no easy task indeed to select from the bulk of literature. Many publications do not sufficiently make clear which results the investigations had and what kind of success had been achieved when testing the presented teaching units. Due to these facts those publications dealing primarily with (media-assisted) teaching units/topics or general media surveys have generally not been taken into account. References which appeared before 1975 are covered only in justified exceptions (otherwise see SPERLING 1981).

* Such a number refers to one of the notes on page 145

1. Media of direct encounter

In the last few years not much attention has been paid to the media of direct encounter, perhaps because they form the traditional core of an illustration-oriented geography teaching and perhaps because of less geography teaching in schools,though direct encounter will continue to be important.

As a result the number of publications on this media sector is small: BRUCKER (ed. 1986) narrowed it to museums, objects and the collection of minerals and does not even mention excursions and fieldwork.

1.1. Excursions and fieldwork

In a seminal article, HASSE (1980) emphasized the importance of the perceptive dimension for the conception of a teaching unit in fieldwork. Here, an evaluative perception of the space concerned is to be achieved by means of fostering attitudes, ideas and information. The criteria 'concernedness' and 'action-orientedness' should be paid attention to (especially in the field of environmental problems). W. ENGELHARDT/MÜLLER (1976) also dealt with the perceptive dimension ("observation as learning and reproduction of experience controlled by reflection") and drew up a practice-oriented, ideal-typical order for school excursions taking into accout some aspects. Fundamental problems with school excursions (e.g. objective orientation, criteria for the selection of teaching objects, guidelines set by the ministries of education) were discussed in SCHREIBER (1976).

GRAU (1976b) expounded the qualifications and objectives of 'excursion didactics' in the training of teachers.

NEUKIRCH (ed. 1977); KNIRSCH (1979; 1984) and M. GEIGER (1984) treat the pragmatic (and partly the organisational) aspects of excursions or the work in the field. KNIRSCH especially dedicated a very differentiated book to what he calls the 'exploring excursion'. VOLKMANN (1986) tried to find out how to make field-trips more efficient for pupils.

1.2. Museums and collections

Geographers have taken notice of the 'museum' as a medium later than members of other disciplines. This was critisized by GAFFGA (1984) who also enumerated museums relevant for the didactics of geography and listed didactic aspects of museum visits. Detailed investigations (amongst others on non-school target groups and their expectations, problems of learning objectives, didactic principles and methods when visiting a museum for geographical purposes) have been made by ERNST (1978; 1980; 1982; 1984) on an open-air museum in Hesse. Further works are dealing with the relevance of open-air museums for the first to the fourth school years as well as on the "museums as places for learning" (KREMB 1981) in general.

HENDINGER (1984) made very thorough and stimulating proposals for older pupils (+17) in the use of museums dealing with the history of industry.

2. Media of the concrete indirect encounter

There are many publications on the field of audiovisual media, but most of them only refer to specific teaching topics/teaching units. Only those on aerial and satellite pictures or films and on school television can be considered innovative. In addition, the following questions are discussed:

- Should atlases, books and maps not suffice for geography teaching, and is the use of films and slides in teaching nothing but a mere enrichment (LIEBOLD 1977)?
- Of what nature are the difficulties of integrating audio-visual media in objective-oriented teaching (JAKAT 1977, as an answer to LIEBOLD 1977)?
- Why is the use of audiovisual media during the first four school years necessary (VÖLKEL 1978)?
- How far are pupils able to comprehend standing and moving pictures (HÜMMER 1981; 1982) what are the criteria according to which the films/pictures should be selected?
- What is the basic orientation in the new (i.e. objective-oriented) training of geography teachers as far as the use of media teaching is concerned (HILLENBRAND 1976)?

Pictures

2.1. Slides

GRAU (1976c) explained in a trend-setting article that the large regional geography-oriented slide series should be replaced by smaller slide series more closely tied to curricular objectives. The new series on Germany edited by BIRKENHAUER since 1983 was expressively shaped along these lines. H. WAGNER (1980) summarized the discussion about the use of slides, emphasizing amongst other things the value of the slide in sociologically-oriented geography teaching; moreover, he outlined some possibilities on how to use slides more often in geography teaching. He saw the didactic value of slides especially in complementary and dichotomized procedures. W. ENGELHARDT (1976) analyzed in how far slides as 'traditional' media must be reevaluated as a consequence of the objective orientation. SCHRAND/WALTER (1980) represented the possible use of slides from different perspectives (taken on the earth/vertical aerial view) by means of several teaching examples.

REINHARD (1978) showed (through interviews with pupils) that the use of slides is justified, especially in elementary schools, despite the presence of more modern technical media. Modern slides, however, have a broad spectrum and can very well be superior to audiovisual media (JÄGER 1978), for all ages (REINHARDT 1980 a).

2.2. Aerial photographs

In the middle of the sixties, the interpretation of aerial photographs in geography teaching developed (cf. SPERLING 1969).

In the late seventies, however, university geographers were still demanding their increased use in schools. SCHALLHORN (1979) gave reasons why vertical aerial pictures (conventional type) were so important. They should therefore be included into school-books in increased numbers. In a summarizing and forward-looking article, M. GEIGER (1979) described (amongst other things) the didactic function of aerial photographs and their relation to objectives of geography teaching. In 1978 he compared the use of vertical and oblique aerial pictures as regards their effectiveness in teaching. He found that the comprehension of aerial pictures depends more on the state of the mental development than on the age of the pupils. As a result, comprehension varies between a naive view and an abstracting interpretation of functional structures. According to GEIGER's observations, oblique aerial pictures tend to concentrate pupils to the foreground and on trivialities whereas vertical aerial pictures guide them to see spacial structures.

In a comparison of the use of pictures by SCHRAND/WALTER (1980), it was argued that the relatively detailed instructions on the methodological procedure when evaluating aerial pictures should be taken more seriously. A similar topic is treated by BRUCKER (1981a) who was the first to draw attention to the change in viewing habits. He made detailed proposals for stages of picture evaluation in class.

There is a lot of criticism about how teachers use the (at that time) relatively new medium 'aerial photograph'. PATZER/VOLLMAR (1980) point out the potential discrepancies between research and what aerial photographs can didactically convey in practice. Therefore just one aerial picture should not be used to work out too many individual problems. GEIPEL's answer (1980) to that article was addressed to the fact that teachers are often only able to provide rather superficial interpretations of aerial pictures. H. FISCHER had already claimed in 1976 that sufficient optical and aerial picture knowledge should be imparted at the universities. Moreover, he pointed out that combinations of aerial pictures with other media considerably enhance the memories of the pupils.

M. GEIGER (1979) and others reported on working with aerial pictures in different school years.

2.3. Satellite pictures

The use of satellite pictures in geography teaching was strongly propagated by BRUCKER and others. He analysed the stages of interpretation. BRUCKER (1976c) as well as, amongst others, SCHROEDER-LANZ (1982), pointed out the general possibilities of their use (BRUCKER 1978a; 1979; 1982). He moreover drafted a concrete instruction unit (BRUCKER 1978b).

Although ANTE/BUSCHE (1979) pointed out the impediments in the use of satellite pictures (insufficient training of geography teachers, high cost of satellite pictures), BRUCKER (1979) retorted that the enthusiasm and the motivation of the pupils refute such arguments. WIRTH (1981: group work in a secondary school class), ALLENSBERGER (1983: infrared pictures in a primary school class), FRÖMEL (1981:

advantages and disadvantages of satellite pictures) and others reported positive experiences they were able to achieve with this medium.

In 1981 the Westermann publishing house - after many years of costly preparations - edited its famous 'Weltraumbild-Atlas' (spatial pictures atlas) making use of the landsat-program in the near-natural green version (as against false-colour reproduction). BIRKENHAUER, in his didactic foreword, showed the many advantages the atlas offers for an exciting school geography. The attempt to introduce the atlas in schools largely failed because schools were unable to afford as many copies as were needed for class use.

2.4. Working with texts

SCHRAND (1977) gave a survey on the methodological organization of how to work with texts and to make pupils aware of their purposes. STROPPE (1983) assigned text and analysis and development of geographical thinking processes and forms. He analyzed such thinking forms and put them in concrete terms with specific geographical texts. FÜLDNER (1979) worked out a completely different approach analyzing books for young people under geographical aspects.

2.5. The newspaper

Comprehensive analyses on the use of newspaper reports in geography teaching have been carried out by FUCHS (1980a; 1980b; 1985). In a short article (FUCHS 1980b), he emphasized the high didactic value of the newspaper as one of the most important extra-school media, especially as the newspaper - in his opinion - enhances like no other medium the development of 'orientation grids' for the purpose of localizing information. In a talk at a symposium in 1983 (FUCHS 1985) he showed how important the newspaper is as a mediator of 'secondary experience' and what this means for 'spatial competence'.

Newspapers indeed impart experiences in reality. It is this reason why, for instance ENGELHARDT (1975) and KÖCK (1978), insist on an intensive use of newspapers in school geography. FUCHS (1980a) again systematically listed examples of what newspaper reports can achieve for geographical objectives. He went on to show which knowledge is necessary for the understanding of newspaper reports and for placing them by making use of a comparison between 1951 and 1976. (See also HAHN 1977/VOLKMANN 1982/WENDEL 1982) Newspapers may have a function to improve reflection and concentration (for example after the overdose of optical-acoustic media, in the opinion of F. GEIGER 1985) and to assist in the recognition of problems (HARD 1985).

2.6. Radio programmes for pupils

Investigations relating to radio programmes for pupils have primarily been undertaken to evaluate their general value for geography teaching with particular reference to their effectiveness for learning. HAUBRICH (1975a) provided a survey of the first case, STONJEK (1978a, 1980a) of the second one. The publications on the radio programmes for pupils can be characterized as follows:

- HAUBRICH (1975a), RIEDLER (1976), STONJEK (1980a, partly), MÖLLER (1980) and DAHLHOFF (1978, detailed) discussed the characteristics of radio programmes for pupils and their significance for geography teaching. In addition, DAHLHOFF described the historical development of (geographical) radio programmes.

- STONJEK presented several empirical investigations on the function of radio programmes (STONJEK 1978a, 1978b, 1980a, 1985). The functions of radio programmes were discussed by HAUBRICH (1978b) and KERSBERG who empirically investigated a broader selection of topics (1980: Report about a non-published thesis written by E. BORDSCHEK, dealing with the question which topics of geography teaching are especially suitable for radio programmes). More reports on this matter were made by BÖNSCH (1984a: evaluation of interviews with teachers on their use of radio programmes in teaching) and by HUNOLD/KERSBERG (1985: consideration of attitude changes of pupils as a result of radio programmes).

Pictures and words

2.7. Combined use of tapes and slides

The combined media (tapes and slides) offered by various firms remain nearly unmentioned in geographical publications, as they have been little used in geography teaching due to their length. The effort by SCHMIDTKE (1978) "to make these combined media suitable for the use in schools" should be mentioned. SCHMIDTKE pointed out requirements of media didactics concerning their teaching relevance, making thematic suggestions for these combined media to be used in geography.

2.8. Television

M. GEIGER (1982a) dealt with the question what kind of fore-knowledge from television is brought into geography teaching by pupils. By means of his investigations on the television behaviour of young people, he found out that they are not very interested in geographically-relevant programmes (although their availability is rather good). Therefore, it seens necessary to instruct pupils how to use television programmes systematically as a source of information.

Whereas SALZMANN/LORANG (1982) pointed out the opportunities TV news offer, GEIGER, on the strength of his investigations and interviews (1985), became rather pessimistic because young people do not seem to be much interested in TV news, cannot 'place' foreign news and do not understand their content or context. Thus he concludes that 'television' does not at present supply a sufficiently strong basis for a comprehensive world picture. It is geography teaching therefore that has to help towards a structuring of this sort of material. RITSCHER (1985) came to similar conclusions.

After first efforts at the beginning of the sixties, school TV programmes were transmitted in all German Länder from 1970 on. BÜRVENICH (1977) presented a fundamental and comprehensive investigation on 'school TV geography'. The accompanying materials for pupils are analyzed and examined about their learning efficiency.

He proved that the combination of school TV with pupils' working material is a learning aid especially suited for less talented pupils. In contrast to this, the accompanying investigations by BREITENBACH (1982) on the school TV series "Weltkunde" (knowledge of the world) showed very positive results as concerns the acceptance of and learning effectiveness for pupils.

The school television programmes transmitted by West German stations were listed and analyzed, amongst others, by STÜCKRATH (1976), KOCH/WEINREUTER (1977), KOCH (1980) and BÖNSCH (1984b). BÖNSCH showed that 'school television' could take over many more tasks, as for instance the developing of teaching programmes. HAUBRICH (1985) showed that essential questions concerning 'school television geography' are still to be answered. His analysis of the production-effect-content-system shows faults which could be eliminated if preliminary research in content and structure would have been done.

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The use and the value of different television programmes in geography teaching were debated by HAUBRICH (1975b) and NEBEL (1978a).

2.9. Films

Parallel to the new stress put upon the ways of teaching by objective-orientation, the development of film strips took place, i.e., an often mute super-8mm-film with a maximum length of 5 minutes. The innovations with the traditional 16mm teaching film are characterized by KETZER (1980b): "The turn to social geography has influenced the geographical film not as much as one should suppose. Since the new curricula have been introduced, however, the visual angle can become more focused, the presentation can be more detailed. Analytical and differentiating films can be made. On the whole, there is a tendency to present problems more intensely, and the end of a film is left open".

SCHMIDT-WULFFEN (1976) comments that many films offered on the media market disregard the question of motivation and problem presentation. Therefore, revised work with films in school geography (in contrast to conventional planning) is necessary, for instance creating a problem-frame before the film is shown. LIEBOLD (1977; cf. the criticism by JAKAT 1977) and HÜMMER (1981; 1982) set up criteria for the selection of teaching films and for methodical recommendations.

Despite - or due to - a lot of criticism about the traditional 16mm film, KUROWSKI (1980) confirmed by means of a test series on specifically geography-oriented teaching films that these, because of their high information density and high degree of motivation, indeed achieve an improvement in the reception of information and an increase in knowledge with an outstanding durability. According to JAKAT (1975), the learning effectiveness of geographical teaching films can even be improved when different media are used together.

KETZER (1977b) reported on new topics at the FWU, the West German 'Institute for Film in Science and School' as well as about new production techniques (also KETZER 1980b): objective-orientation is met by a clearer structuring of the films. Film strips were introduced into teaching in the mid-sixties. In the following period, properties, fields of application and didactic functions of film strips were emphasized (amongst others GINZEL 1976, NOLZEN 1978).

A first comprehensive stocktaking of films by a didactician of geography was undertaken by M. GEIGER (ed.

1980). Contributions in this book dealt with specific problems of the development of geography working strips, empirical teaching research and practical teaching methods. M. GEIGER compared the intentions and the possibilities of the 16mm films and film strips as concerning media and geography didactics (similarly GINZEL 1978a).

KETZER (1980a) provided a survey of the characteristics, tasks and future perspectives of the film strip (partly similar to W. SCHULZE 1978), while W. SCHULZE (1980) examined the comparative efficiency of film strips and schoolbooks by comparing the increase in knowledge achieved by the one and the other.

GEIGER (1980b) showed that film strips open up new aspects of aerial picture presentation and evaluation.

3. Media of the abstract indirect encounter

Literature for this field is especially wide. This is particularly true for maps, atlases and globes, since here, due to emphasis on the space as a field of interaction of social groups (cf. KÖCK in this book), restructured school atlases and refined cartographical representation techniques became necessary since the beginning of the seventies. The use of computers in teaching, however, has not had a decisive impact so far.

3.1. Single maps

Since thematic maps have become more important in geography teaching because of the trend towards systematic geography (cf. KÖCK in this book), a more comprehensive and more detailed map understanding is necessary. However, two problems resulted:

1) Thematic maps have hardly been given priority, though already necessary for the first school years (W. ENGELHARDT/WENDEL 1975) and in later years their usage is developed only to a small degree (ITTERMANN 1979b).
2) The variety of topics and scales of the maps used has resulted, in the seventies, in a neglect of place-names (FUCHS 1983; KIRCHBERG 1980a; 1984).

In special contributions the following items were discussed: the function of maps in geography teaching (ITTERMANN 1979a; SCHÄFER 1979); the need to consider communication science in map use (HÜTTERMANN 1979; SPERLING 1982);

the development of the teaching model "introduction into the reading of maps" (RAUCH 1976); the carefully graded selection of maps leading up to skilled use (THIELE 1980); the age-specific use of legends and symbols (GROHMANN 1975); mapped data representation appropriate for schools (HÜTTERMANN/F. GEIGER 1979); and the present technical state of (school) cartography (FREITAG 1985).

As explained above, there are a large number of publications on how to make the young pupil acquainted with maps, especially physical maps (scales, symbols, heights, colours). W. ENGELHARDT/WENDEL (1975) and SCHWARTZ (1981) dealt with terminology, paradigm and method. POLLEX (1977), K. L. SCHMIDT (1979), HASLER (1981) and others 1) reported on other general objectives and problems in relation to the use of maps in the first four school years. WEISE (1977) provided a survey of map techniques in schoolbooks.

The value of conventional map interpretation was emphasized by HÜTTERMANN (1978). He analyzed, amongst other things, the step from the reading of maps to the interpretation of maps, examined the objectives required; he then contrasted procedures, approaches and fields of use of the interpretation of maps in schools and universities (including an interpretation of the 1:25 000 map-sheet 4506: Duisburg'), differentiated according to their use either in school or geography department. The study by HÜTTERMANN (1977) which is partly similar, was related to school years 11-13.

3.2. Wall maps

Wall maps seem to be an obligatory and thus unquestioned medium in geography teaching. Apart from the consideration of representational methods in school wall maps (PLAPPER 1974) and a somewhat curory mentioning by BRUCKER (1982b), there are no notable publications.

3.3. Atlases

Apart from THIELE (1984), the reports by ARNBERGER/MAYER (1972) and CLOSS/GAFFGA (1985) documented the changes in atlas cartography. They showed that the development of cartography as well as the curriculum discussion of the last few years are reflected in school atlases.

CLOSS/GAFFGA, moreover, gave a survey of the seven most important school atlases published beween 1974 and 1984 (similar also WAGNER 1976). BEYER (1980) and BRUCKER (1982b) examined function, use, etc. of these 'new' atlases. The dissertation by THIELE (1984) comprehensively discussed and analyzed all these questions. THIELE even drew consequences for the future development of school atlases.

The discussion about the concepts and the representational techniques in the 'new' atlases concentrated essentially on the new issues of the DIERCKE atlas (edited by WESTERMANN) and the ALEXANDER (edited by KLETT). Comparisons were undertaken by E. WAGNER (1976), AURADA (1981), MITTELSTÄDT (1983), GORKI (1983) and THIELE (1984).

SEMMEL (1977: necessity of the use of different geoscientific maps in teaching as well as in universities), ARNBERGER (1982: perception of the contents of maps) and WERLE (1985: renaissance of school atlases for the first four school years) dealt with different aspects concerning the use of an atlas.

3.4. Overhead projector transparencies

Transparencies are plastic foils for overhead projectors. They can either be autofabricated or bought. Due to their more versatile use, they strongly compete the wall map and the blackboard. This situation as well as the advantages and disadvantages of transparencies were discussed by ARMBRUSTER /HERTKORN (1976) and JÄGER (1977).

Their didactic place in typical teaching phases was explained by HÜBNER (1975), making clear how 'processes' could be that transparencies are well suited to explain spatial processes.

Numbers

This media sector, i.e. 'statistic diagrams and abstract maps with numbers', must be seen as a unit (cf. K. ENGELHARD 1977a) since the three media mentioned emerge from each other in the given order.

3.5. Statistical procedures

LEUSMANN explained in 1977 that quantitative methods could well be introduced in the school years 7 to 13. PREIS (1977) dealt with the application of mathematical and statistical procedures. SCHICKHOFF (1977: representation of statistical procedures relevant for school geography), H.

KÖCK/MEIER-HILBERT (1977: teaching examples from local of climatic geography), SCHWARTZ (steps of interpretation of statistics in geography teaching) and BÜSCHENFELD (1977a: learning objectives when statistics etc. are used) dealt with specific methodological questions.

3.6. Statistical diagrams

BÜSCHENFELD (1977b) gave an overview of their objectives illustrating them with some examples from lessons.

3.7. Statistical maps

It was only BÜSCHENFELD (1977c) again who offered a survey. For so-called "graphical textual compositions"; LATSCH (1976) provided examples suitable for use in the 11th to the 13th school years.

3.8. Computers

An inquiry, undertaken by the weekly DIE ZEIT, 31. May 1985, showed that younger Germans seem to be euphoric about computers whereas the majority of people older than 40 is not prepared to use a computer. Although NOLZEN (1975) had already discussed the use of computers in geography teaching in a basic article and KILCHENMANN (ed. 1975) had published computer teaching programmes nearly at the same time, the topic was not dealt with for a long time. This was partly due to the fact that schools, as a result of budget problems,did not want to invest in largely unknown computers. Thus, research was also blocked. It was not until the beginning of the eighties (when the microcomputer became available and affordable) that computers could be used in different school subjects. The situation on the software market, however, is still not satisfactory (cf. POHL 1985b: synopsis of a very detailed literature and software list). At the beginning of 1985, no teaching software was available in geography (POHL 1985a, p.8). To date the book by BRENNER/ELSING/WAGNER (1985) represents the spade-work although the first ideas for teaching practice had here and there appeared before (SCHUPPAR 1982; CLOSS 1983). The activities of a growing number of school geographers (cf. POHL 1975a: comprehensive report concerning amongst others the relations to curricula, technical requirements, possibilities of application; 1985c: the advantages and disadvantages, and trends in the use of computers) will certainly fall on fertile soil so that HAUBRICH's (1984) ideas concerning "geographical education for the world of tomorrow" may be fulfilled in this field as well. The actual ideas of computer assisted learning in geographical instruction were contained in an issue of the periodical PRAXIS GEOGRAPHIE (KEIL 1987; POHL 1987; SCHRETTENBRUNNER 1987 a.o.).

Figurative abstract media

In contrast to other representations of media didactics (FICK 1980; BRUCKER ed. 1986), it seems advisable to reserve a special section for figurative abstract media here, because of their specific working aspects.

3.9. Drawings

ACHILLES (1977, 1979, 1983, 1984 and others) pleaded successfully for a comeback of drawings into geography teaching at all school phases.

3.10. Vertical sections, schematic diagrams etc.

BÜSCHENFELD (1977d), KNÜBEL (1977b) (vertical section and landscape section), BÜSCHENFELD (1977: diagrams) and GRÖNE (1978: memory sketch) dealt with some special forms; GINZEL (1978c) pointed out the value of an episcope in such cases.

3.11. Cartoons

Cartoons have for some time received attention (cf. UPPENDAHL et al. 1978; FRITZ 1980). It was BRUCKER (1976b) who here led to a break-through. Further report on the didactic function and on the evaluation of cartoons were made by BRUCKER (1981c) and M. GEIGER (1982b).

3.12. Sandboxes, models

BRUCKER (ed. 1986) assigned a special chapter to sandboxes and models, together with globes and planetariums, together called "three-dimensional figures" by him.

In the first four school years especially, the sandbox belongs to the 'traditional' media of geography teaching. Due to this (maybe even 'pre-technical') degree of acquaintance, few publications are specifically dedicated to this medium, or else there is so much time between these few publications that some authors (SCHMIDTKE 1977; REINHARD

1980b; BRESLAUER 1985) feel the necessity to call for a 'renaissance'.

SCHMIDTKE (1977) and LANGHEINRICH (1979) deal with fundamental didactic aspects (amongst others advantages of learning). 'Model' as a term is at least used in two different meanings within the didactics of geography: the one being models of real things, for which many impulses are provided, the other being a delimination to the model concept in scientific theory (REMITZ 1980a).

3.13. Globes

Although the globe, due to the reduction in significance of regional geography, is not as important as it used to be, its two functions of orientation and information cannot be renounced. This was pointed out by ITTERMANN (1977a).

NEWIG (1975) and WOITSCH (1978) gave useful teaching proposals for the use of globes. SPERLING reported on the fantasy globes of young children.

4. Combined media

Combined media were a didactic innovation at the beginning of the seventies (cf. KETZER 1980b and FICK 1980). They state that "presently" (1980!) there is an increasing tendency to combine the different means into media systems. Geographical media packets should be devised (based) on multi-volume schoolbooks or thematic blocks, consisting of special maps, workbooks, slide series, transparencies, copy patterns etc.

But working with these media means long teaching periods, as the examples of the units show that were produced by the RCFP committees and published by the Westermann and Klett publishing houses. Though expressedly designed as 'new materials for a renewed school geography' they did not succeed because of the very long teaching sequencies necessary for executing them and because of financial restrictions. Instead, short programs or reduced media systems were used (cf. FICK 1980:205) and in particular the good old school textbook.

Correspondingly, NEBEL (1978b) correctly noticed that it was more practical to work along a looser assignment scheme as a base for alternative possibilities which grant the teacher a more flexible margin of decision as concerns selection and timing of use than to work with a media packet. GROSS (1985) had similar thoughts.

4.1. School textbooks

In the seventies the geography textbook underwent so deep a change that this development as well as a comparison of the books published since then is worth a separate consideration (see the paper by VOLKMANN in this book). Here just one publication by SCHRECKENBRUNNER (1982) on the conceptional change of schoolbook texts will be mentioned.

4.2. Workbooks/Worksheets

BRUCKER (1981b) pointed out the difference between information sheets and worksheets and explained - as well as BAUER (1984) and partly LANGHEINRICH (1981a) - their function in objective-oriented geography teaching.

BÖRSCH/LORENZ suggested that, especially in the school years 11 to 13, workbooks and work material were more successful than textbooks, which cover more topics but narrow the range of spatial examples.

4.3. Games

Games are considered to be combined media because data/information and relations between such data/information determine the content structure of the game materials. BIRKENHAUER, however, suggests that they are not media at all, but complex forms of teaching similar to projects.

BUSSE (1985) provided a survey of the game forms and game types in geography teaching which at the same time shows the opportunities and limits of such games. In another fundamental article HAUBRICH (1983b) presented pedagogical and psychological game theories, offered information about different game forms and set up a list of objectives for geographical games. A general discussion about games was also given in HAUBRICH (1978c). Individual games and impressions of games are presented by HAUBRICH (1983a) and LINDEMEYER (ed. 1985).

4.4. Miscellaneous combined media

There is no lack of self-initiated combined media. VÖLKEL (1978) and others made general proposals concerning the field of audiovisual media. GINZEL (1978b) gave concrete examples, only partly underpinned by theories (television and tape recorder, film strip and slide). Similar examples may be cited from the following authors: SCHMIDTKE (1978: combined use of tapes and slides); LATSCH (1978: "graphical textual composition"); BEYER (1980: completion of thematic detailed atlas maps by means of figures and schematic drawings; 1986: holiday brochure as combined medium); RIEDLER (1976: school radio in the media system) and others.

Notes

It has not been possible to compare all contributions in BRUCKER (ed. 1986) with the present manuscript.

0) The author wishes to thank A. BRUCKER all the more for a critical reading of this manuscript.

1) The corresponding articles have partly different conceptions or results the contents of which cannot be rendered here, but can only be listed chronologically.

2) Compare the contribution by H. VOLKMANN in this book ("Geographical textbooks and atlases as mirror of the curriculum development in the Federal Republic of Germany").

5. References

Abbreviations:

BFL	Blätter für Lehrerfortbildung. München.
BGR	Beiheft Geographische Rundschau (as from 1979: Praxis Geographie). Braunschweig.
EHM	Ehrenwirth Hauptschulmagazin. München.
GH	Geographie heute. Seelze.
GR	Geographische Rundschau. Braunschweig.
GS	Geographie und Schule. Köln.
GU	Geographie im Unterricht. Köln.
HFG	Hefte zur Fachdidaktik der Geographie. Kastellaun.
KN	Kartographische Nachrichten. Bonn-Bad Godesberg.
LA	Lehrmittel aktuell. Braunschweig.
LJ	Lehrerjournal. Ansbach.
PG	Praxis Geographie (until 1979: BGR). Braunschweig.
SCH	Die Scholle (as from 1983: LJ). Ansbach; München.

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Developments in the teaching of geography lessons

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1. Background

There are three groups of factors determining the contents and forms of teaching. These are the subject sciences themselves; the educational sciences; and society, the evolution of which has led to changes in geography teaching. Towards the end of the 1960s significant and parallel changes occurred in all three fields, which had an almost immediate effect on teaching.

The following presentation is restricted to methodological developments. The scientific and didactical aspects of geography will be used for explanatory purposes only.

Starting from the idea that democratic behaviour has to be trained for the science-oriented world of tomorrow, a pupil and action oriented approach to teaching was proposed (e.g. ROBINSOHN, 1969) resulting in new teaching ideas. Thus in the field of geography, the student should be educated to understand planning in towns, villages, and in the countryside. Such an ability was directly applicable as new laws called for citizen participation in community planning. By this the student's neighbourhood became the focus of methodological interest. The student was therefore put into a position to analyse real and up-to-date planning decisions and to evaluate them with the knowledge acquired in geography lessons.

2. The role of journals in the didactics of geography

One of the numerous effects of increasing didactical interest in geography was that journals for the didactics of geography came into existence. In addition to theoretical discussions they concentrate on contributions to practical teaching. Before 1970 there was only one national publication, the "GEOGRAPHISCHE RUNDSCHAU". The journal's main intention was to make its readers familiar (and in a readable language)with research in the various branches of geography, in order to facilitate the preparation of lessons for them.

In 1969 and 1970 a sort of appendix was included in which the reorganisation of geography teaching was discussed. It was there that the first suggestions for the application of these new concepts in teaching were presented. Of utmost importance for the acceptance of social geography became supplements that presented the new social-geographical content, relating to human life situations, for instance, by means of the new methods of programmed teaching and simulation games (e.g. HAUBRICH, 1976, NOLZEN, 1976).

Another journal, "Der Erdkundeunterricht", focused on the application of special skills, e.g. drawing (THIERSCH),, statistics (SCHRETTENBRUNNER), aerial photographs (ERNST, and others), atlases (FICK, among others), and slides (RITTER) in geography teaching, to name only a few.

Together with the changes in school geography around 1970 journals began to appear that devoted much more space to topics of practical teaching than had been the case before. The new journals, taken together, reached many more readers than the "Geographische Rundschau" ever did. Teachers were obviously more willing than had been thought to take up new methodological questions.

The new journals differ widely from the older ones in content and style. As a rule there is an editorial summarizing the principal outcomes of the contributions to the theme of the respective issue. The contributions to each issue are geared to specific grade levels, such as O-level or A-level education. A wide range of materials is offered, e.g. texts from newspapers and books, maps, pictures, and statistics with the help of which students may work individually during geography lessons.

Taking up an idea by J.BIRKENHAUER, the publishers of the "Geographische Rundschau" created a new journal in 1971, called "Beihefte". From 1978 on, the journal having been renamed "PRAXIS GEOGRAPHIE", almost every issue has been devoted to a specific topic, in addition to general ones, on examinations or ressources. For instance, an increasing emphasis has been given to regional topics, e.g. SE-Asia, Brasilia, Austria, not in the sense of presenting individual landscapes but with respect to crucial issues of individual states.

"GEOGRAPHIE UND SCHULE" (published since 1979) concentrates on topics of A-level education, e.g. A-level examination questions. In addition to such topics other topics are usually chosen from systematic geography (continental drift, geographical systems), or cover broad regions (high mountain systems, political space). Papers dealing with an individual state are the exception (Germany, Eastern Middle Europe, SE-Europe).

"GEOGRAPHIE HEUTE" (since 1980), with its theme-oriented issues, caters for all school types. The geographical aspects of a theme are presented in an introductory essay, followed by teaching units for all types of school, from primary to advanced level. Some of the topics are regional (e.g. Bavaria, Berlin, China, Polar-Regions, Alps), others deal with general geography (climate, agriculture). Stimulating examples of lessons and ample provision of materials take up most of the copy. The journal took over in a merger the "Geographie im Unterricht", having been run on very similar lines.

3. The role of the geography text book

Didactical innovations also had their impact on school books. As late as the early 1970s the books were oriented towards the general presentation of whole countries. Often they gave good and vivid descriptions of individual landscapes and of their people. Social conflicts were largely evaded. Exercises aimed at repetition and topographic knowledge. From the vast number of about thirty different books per school year only few can be presented here. A new beginning was made as early as 1968 with GROTELÜSCHEN/SCHÜTTLER's "Dreimal um die Erde" ("Three Times around the Earth").

The traditional sequence of "Länderkunde" from "near to far" with its single "passage round the earth" was replaced by a "three-times-round-the-earth"- sequence with no claim to regional completeness. In the first "run" geographical highlights from all over the world were presented, such as volcanoes or important waterways together with a pictorial presentation of vegetation belts, shown in picture sequences. In the second "run" a very short selective survey of regional geography was offered, in which a number of countries were discussed under a general heading, e.g. Mauritania, a desert state. The presentation was traditional, merely compiling facts. The third "run" was concerned with general problems of geography, e.g. nutrition of mankind.

The most radical breakaway from the traditional school book came with HAUSMANN's book "Welt und Umwelt". Intended to be a working-book, it was a collection of facts and tasks oriented towards specific teaching objectives. The students were asked to formulate results on their own. As many tasks however did not lead to conclusive answers, voluminous teacher handbooks had to be published, in addition to the school books. Although there was a positive response to the book, it was not successful over a longer period because it was felt a school text book needed to formulate results. It was followed by BIRKENHAUER/HENDINGER's "Blickpunkt Welt", closer to the traditional school book but breaking ground with its new subjects. The world was approached under three aspects: Space and range, space and regularity, and space and risk. Later text books, however, moved away from such experimental designs, orientating themselves much stronger again along the lines set up in the official syllabi. They presented results, but also tried to activate the students through tasks and additional materials (e.g. BÖHN/TRÜB "Erdkunde"). (See also: VOLKMANN in this book)

4. Topics in geography teaching

The topics of regional geography teaching were closely tied in with topics of systematic geography, whereas systematic geography was illustrated by means of regional examples. In teaching about the River Rhine, for instance, the regional inventory was supplemented by information on its surroundings or utilisation, as well as on terms like slope angle, transport energy, gravel, and origin.

Teaching systematic geography permitted the selection of topics for their technical or social relevance. Disregarding the peculiarities of a region general patterns were aimed at. But the problem remained that all this was done with very few examples, and this made it impossible for the student to separate regional from general facts. And even the teacher did very often not know how typical the example was he/she had used.

From the abundance of topics only few can be mentioned here.

In the field of physical geography emphasis was laid on climate and vegetation (e.g. HAHN,R. & W.HOFFMANN, 1984; STROPPE,W., 1983). Natural hazards were another topic attracting students through their dramatic aspects (e.g. SCHWENGLER,H., 1982; BEIL, G., 1980; LINDAUER,R., 1986; PETRUSKA,P., 1984). The growing environmental concern led to many ecological topics (e.g. BEIL,G., 1984; HEENE,H.-P., 1984; GILSTER,A., 1984; WROZ,W., 1984; SCHÖPKE,H., 1983; VOLKMANN,H., 1982; NIEMZ, G., 1980).

In the field of social geography emphasis was increasingly laid on topics of immediate relevance. Teaching no longer aimed merely at demonstrating their presence but also at a rational shaping of the future. Examples from the field of settlement geography were village planning (e.g. MÜLLER,A., 1985, SCHNEIDER,M., 1983; RIENECKER, 1970), and above all, city planning, (e.g. NICOLINI,G., 1983, SANDER,H.-J., SCHIEF,B. & BELKE,B., 1981; MEYER,P., 1984; MARTIN,R., 1979; HÜSGEN,M., 1985).

The topics concentrated on the pupils' surroundings where they could gain personal experience, apply specific methods, and partake in shaping their own future.

Because of the long-range importance of the Third World developing countries became another focal point. An enormous amount of exemplary teaching units were published, among them those by HAVERSATH,J.B., 1980; RINDER,B., 1980; GLENE-WINKEL,W. & W.HENNINGS, 1982; STRÖHLEIN,G., 1982; WINTER,D., 1984; SCHMIDTKE,V., 1986. A very comprehensive contribution is that by SCHMITT-WULFFEN (1981) with its fifteen teaching units on regional and social disparities in Africa, although the reasons he gives for under-development are somewhat biased.

The development of industrial society is best reflected in the different concepts of the two super powers. Thus the values of the American Way of Life and of socialism in the Soviet Union were not only treated because of their regional-geographical importance, but also because of their importance for the student's future. Examples are: KIRCHBERG,G., 1986; BARTH,J., 1981; PAUSCH,R., 1981.

5. Types of Geography Teaching

The types considered here are relatively independent of the subject. They are only briefly discussed for lack of space. None of them is new, but the nature of the application is innovative. The development of the didactics of geography as a university subjct in its own right also led to an analysis of the methods. It became important more and more to use special forms of teaching organisation designed for special purposes.

5.1. Programmed Teaching

As in other subjects it was also hoped that more independent work by the students would lead to an improved way of knowledge transfer in geography (compare with SPERLING, 1981, p.548). At the beginning the programmed teaching approach was also tried for regional geography, as, for instance, in two programs on Iceland (SCHOLLE, 1970) and

Jutland (KNÜBEL, 1986). Programmed teaching units in social geography had shown that this new method was very suitable for the spreading of new content. Examples are "Sich bilden" (SCHRETTENBRUNNER, 1971), "Sich erholen" (HAUBRICH, 1970) and "Arbeiten" (RICHTER, 1975). Most programmes were on subjects of physical geography, e.g. karst phenomena (KRAUTER, 1976), volcanism, earth-quakes (both KULLEN/STROBEL, 1974), or the general circulation of the atmosphere (BAHRENBERG, 1973). Finally there were programmes on instrumental geographical topics such as those by KELLERMANN (1977,1981), on geographical grids and the presentation of contour-lines in maps. (Cf. also with the programmes on basic geographical techniques, by BIRKENHAUER).

After a short boom the use of these programmes slackened. The advantage of programmed teaching was said to be the immediate confirmation of the student's work, thus giving him a feeling of success. The disadvantage was said to be a rapid decrease of concentration and a quick increase of fatigue (cf. SCHIEFELE (1969); for disadvantages see THEISSEN (1986, p.233). The reasons for the rapidly declining interest in programmed geography teaching are thought to be its restriction to cognitive and instrumental skills as well as the lack of independent action. It is still felt to be suitable for the training of skills, such as map-reading. The most decisive reason however was the general reduction in financial supports for schools.

5.2. Computer-Assisted Learning

One line of up-graded programmed teaching makes use of the computer's ability for more branching, for handling more data, for coloured graphics, and for detailed comments and evaluations.

So far only a few computer programmes for geography teaching are available. In Bavaria, they were produced by the centre for CAL in Augsburg. Examples for such programmes are: SCHRETTENBRUNNER, 1977, 1978, and BENNER, ELSING, WAGNER, 1985.

CAL allows the handling of large amounts of data. Beyond such simple tasks like checking on distances punched in by the student or the generation of climatic diagrams the future focus of computerized teaching will be the use of statistical methods or the handling of geographical data by statistical methods. It might be calculated, for instance, whether computer teaching and learning will become more important once there is a sufficient number of programmes to handle complex questions in a user-friendly way. Probably it will never become more than a supporting tool. Teaching geographical problems will always require a fairly substantial amount oforal communication.

5.3. Games

Games where pupils assume certain roles or simulate decision-making processes have become to be regarded as a matter-of-course, at least, in the handbooks and journals, because they are student and action-oriented, because they promote learning in a social context and, last but not least, because they make lessons more exciting.

HAUBRICH (1977, p.166) pointed out that a game should not only consist of the stages of preparation, information and decision-making, but that, after the game, the students should analyse their decisions and how they were arrived at.

Games are mostly concerned with the following two aspects:

(1) spatial planning,
(2) awareness that space is shaped by groups. Impulses were given by WALFORD (1972), especially through the German translation by GEIPEL and HOFMANN.

The break-through, however, came with the examples published in "Geographische Rundschau", among them a game on the planning of a pedestrian zone (HAUBRICH, 1974), or the routing of a new motorway (NEBEL, 1975), or the prevention of overfishing (TROMMLER, 1978). Though games are certainly loved by students, there are three major disadvantages: they take too much time, they are too expensive because each student needs printed material, and quite often they are not geared to students' present preferences for certain subjects. This is especially true for the voluminous games that were produced at high cost in the "Raumwissenschaftliches Curriculum Forschungsprojekt" (RCFP), research project on the teaching of geography, although the material compiled was indeed very good. Examples are the games on the construction of an airport (FRANZ, and others, 1977), the competition for space at the coast (RENNACH, and others, 1980), or on soil-erosion and soil-conservation (NIEMZ, and others, 1980). All these games included descriptions for further experiments and studies.

5.4. Project-oriented teaching

Projects, as defined by BAUER,H. (in: BÖHN, 1985, p.152) are action- and student-oriented teaching units having the following properties:

- a geographically relevant situation, mostly from the student's neighbourhood, is analysed, controversial views are recognized, and possible solutions are arrived at,
- a close context with the matter under consideration including field work, if possible;
- a high degree of willingness to collect material and to make use of it, and continuing enthusiasm
- the classroom-lessons should be followed by practical work aiming at participation and involvement in the problem under discussion, e.g. by means of a poster-campaign, letters to newspapers, a contribution to the school journal, a school exhibition, construction of models, and many other activities.

This form of teaching therefore requires many more activities from the learner than traditional recognition and recall.

Interesting proposals, recently made, centred on the use of an inner-city-street (RÖSSLE, 1985), or pubs in the medieval core of the city of Nuremberg (FIGEL, 1985). As the project is to initiate student-activity, a topic must be selected that is related both to the student's neighbourhood and his immediate concern. Since projects should be created at the schools where they are supposed to be carried through, literature can only offer suggestions. Many new school books include suggestions for smaller projects that can be handled in the course of regular teaching.

6. Methods of geography teaching with regard to subject-matter

6.1. Direct Encounter

"It is the art of methodology to change dry facts back into living action, to transform objects back to inventions and discoveries, productions back to creations, plans back to concerns, treaties to resolutions, solutions to tasks, and mere phenomena to thematised phenomena" (ROTH, 1967, p. 116).

This concept, differing from traditional ones, was introduced to the field of the didactics of geography by

BIRKENHAUER (1971). His definition is that "... immediate encounter, beyond the student's direct exposure to the object, means that the student develops a deep reaching, thrilling and meaningful relationship with the object in a way that this encounter creates involvement, problem-orientation, and the formulation of questions and doubts" (BIRKENHAUER, in: BÖHN, 1985, p.142).

The immediate contact has to be regarded as the fundamental principle of geography teaching. It is especially important for motivation and the opening phase of a lesson. It can take place by exposure to a certain place, or to a certain object, or by interview. It is also important because the objects of teaching may partly be found outside the classroom. Immediate encounter therefore means geography in intensive contact with reality - one of the main postulates since 1969.

Through immediate contact the principles of motivation and activation are brought into teaching. Being motivated means that the student identifies himself with the teaching aims, and that he incorporates them (SCHIEFELE, 1969, in: BRUNNHUBER, 1971, p.21). Activation (towards a certain behaviour) means that first this behaviour has to be presented to the learner in the first place before it can be spontaneously learnt. "The inclusion of spontaneity makes it easy for us to exclude non-reflected and non-productive activities of the students as it signifies the self-controlled approach to an accepted aim" (BRUNNHUBER, 1971, p.40).

This concept led to renewed demands for excursions and field work as the bbest means to bring the student into an immediate contact. Primary school children may, for example, examine recreational areas, pupils of O-level education may analyse the city (FRANZ, 1977) or study the "Nördlinger Ries" for meteorite impact traces (SCHNEIDER, 1986). As for role and planning games immediate encounter is most efficient when it takes place in the student's personal environment.

6.3. Regional analysis ("Strukturanalyse")

It is the main purpose of regional analysis to show that the activities of people transform nature in a way that it is highly dependent on the respective social environment. Thus each discussion of a certain form of landuse or settlement or of a specific area has to start with the formulation and explanation of its characteristic trades (from the curriculum for the four-year-"Realschule" in Bavaria, dated Feb 27th, 1978). In this process immediate contact is supplemented by data-registration (collecting of statistics, interviews etc.), data-evaluation and data presentation, drawings, tables and graphs...). One of the first regional analyses was presented by JAHN (1976). He was criticized for trying to cover as many aspects of the study region as possible, in an encyclopedic fashion. In practice, however, this fashion is still wide-spread.

7. Final remarks

This contribution briefly outline some methods and their development in geography teaching. A number of aspects, such as inductive, age-oriented or gender-specific approaches, the use of case-studies, "dynamic" teaching, or the discussion of homework and grading, were omitted here, because it was the purpose of this paper rather to show that the changing pedagogic and content orientation of geography teaching made possible the introduction of numerous new methods to the classroom. It was and still is the aim of this new "geography" teaching to educate students to become responsible citizens, capable of participating in space-relevant, decision-making processes, and to give them the courage to do so.

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Geographical textbooks and atlases as mirrors of curriculum development in the Federal Republic of Germany

1. Textbooks - curriculum - school system

Textbooks allow only vague conclusions to be drawn on actual classroom activities since they do not determine them completely. Fortunately one must add. Nevertheless they certainly represent a good and true reflection of a country's curriculum, and influence classroom activities strongly.

This relationship is the consequence of publishers' economics. No publisher will publish a book that does not comply with a prescribed syllabus since the book would not sell. If, however, the curriculum is only a general outline merely making suggestions for the selection of content it may result in a broad choice of competing books with great differences in structure, themes, and method.

For many years the Federal Republic of Germany enjoyed the luxury of about ten companies each publishing one or - at times - even two or three different sets of textbooks. This held true especially in the 1970's when large public investments in education and growing numbers of students seemed to guarantee economic success. Since then economic forces have cut back the independent companies to about five. (cf. Fig.1)

Looking back at almost forty years of geography textbook production in the Federal Republic it seems proper to distinguish five generations of textbooks, each related to corresponding periods of curriculum development. These are the

period of assurance
period of experiments
period of consolidation
period of differentiation
period of restoration.

These periods cannot be separated clearly from one another by a specific date but overlap. This applies even more to the use of textbooks. Occasionally different types were in use in one school at the same time (cf. Fig. 1).

(Fig. 1)

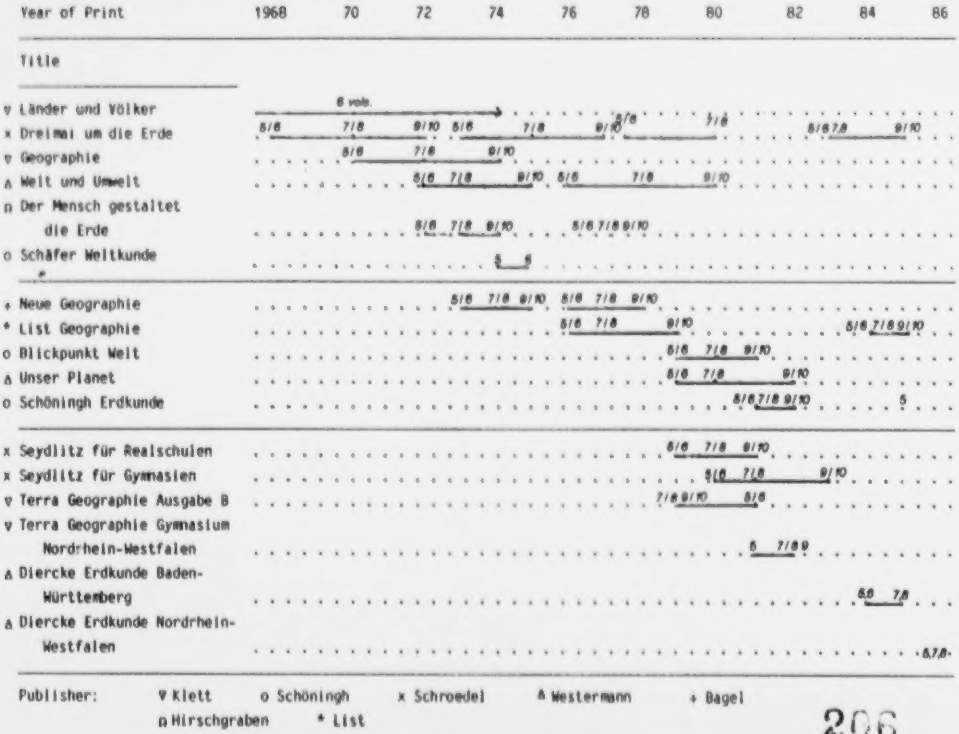

Fig. 1 First publication and revised editions of Geography-textbooks for grade 5 - 10

For a full understanding of the changes in the past some particulars of the West German educational system have to be kept in mind. Of the greatest consequence is the fact that the Länder exercise the constitutional right to determine their educational legislation. For many years this led to slight deviations from the rule only. For example all of them adhered to the same school types (cf. for more detail HAUBRICH 1982, p. 100 ff). Over the last few years differences in educational organization, policies and practices have grown considerably.

2. Textbooks for grade 5 - 10 (students aged 10 - 16)

2.1. Period of assurance

Compared to other periods this one is by far the longest. It lasted well to the end of the 1960's. Throughout the country textbooks differed only little. Fundamental to all of them was the regional principle starting off with Germany in grade five and 'dealing' with European and overseas states in the following four years to return to "Germany in Europe" in grade ten. In grammar-schools (Gymnasium) the following two/three years were devoted to thematic geography: physical and economic geography on a world-wide scale. A typical book title was **"Länder und Völker"** (Countries and peoples).

The inner structure and the method employed were in all textbooks more or less alike. Every unit was introduced by some questions, predominantly referring to the topography of a state or a continent. An informative text made up the bulk of the book with illustrating pictures, a few simple maps, profiles and some statistics in the higher grades. The concluding assignments referred mainly to the text. In grade five they might be of the type: "All I know of the Harz mountains.", in grade ten: "Describe the outstanding characteristics of the industry in Württemberg". In both cases they demanded a summing up of the information given before.

Occasionally there occurred a different type of assignment in grade ten: "Compare the map of Salzgitter with that of other cities and arrange examples of different types of cities". This assignment following a rather superficial description of Hannover, Braunschweig and Salzgitter served as a starting point for urban geography for which the book itself provided hardly any material at all. The main function of textbooks was "to assist the student in his preparation for class recitation" as one handbook on methods put it (cf. MEYER-WILLUDA 1966, p. 33).

The textbooks showed no impact of the "Arbeitsschule", the German counterpart to J. DEWEY's "learning by doing", which had become well established in German schools in the 1920's. The lively discussion to select a few, well chosen examples instead of overfeeding the students with numerous details did not bring about a substantial change either. Any attempt to publish a textbook based on the notion of appealing to the student's interest, for example, by highlighting and fascinating topics ("With the storks to Africa"), failed (cf. HINRICHS 1970, p. 58).

2.2. Period of experiments

In 1968 a new textbook appeared with the programmatic title **"Dreimal um die Erde"** (Three times around the globe). The subtitles of the three volumes designed for a six-year-course in geography reveal its basic structure which lead from small to large spatial units and from simple to highly complex structures:

Grade	Subtitle of the volume		Printed
5/6	Erdkundliche Einzelbilder	Geographic Case Studies	1968
7/8	Erdteile und Länder	Continents and Countries	1970
9/10	Unsere Welt im Wandel	Our Changing World	1972

In grade 5 and 6 the student learned how people live in different natural and social settings all over the world. From the very beginning economic and socio-geographic issues were at the core of geographic education. Topics were: "Life at the Seaside", "In the Cold/Moderate/Arid/Tropical Zone", "In the Mountains", "In Mining and Industrial Areas", "In Large Cities", "Volcanoes and Earthquakes", "The Earth in Space". The themes of single units (usually 2 to 3 pages) might be: "Across the Alps to Italy", "Cotton from the Mississippi" and "Wool from Australia".

The second volume (grade 7/8) concentrated on social structures and processes, e.g. "Nigeria: From a Colony to Independence", "Rapid Economic Growth in Japan" and "Structural Changes in the Federal Republic of Germany".

The last volume (grade 9/10) attempted to provide the student with information on such global issues as "Population Growth", "Food Availability for Mankind", "Energy Resources", "Urbanization", "Protection of the Environment", "Relations with Developing Countries", "Tourism", which required the incorporation of concepts from sociology, economics, history, and natural science.

The methods employed showed no resemblance to earlier books. Carefully chosen comparative studies constituted the general principle, especially of the first two parts of the course, e.g. "Coal and Steel from the Ruhr", "Coal and Steel from Pennsylvania". The students did not get a straightforward textbook any more but a book containing a great many pictures, maps, graphs, figures which he or she had to analyse and to interpret. Typical assignments might include: "Compare the air photo with a plan of the harbour", "Which settlement in the two pictures is the older one"; or "Compare the precipitation of the two stations and give reasons for the difference" (all for grade 5/6).

The texts, too, pursued different intentions. Some were to provide information only. Others offered source-material taken from a correspondence or advertisement. Lively descriptions formed another group.

Aids and additional material constituted a further substantial change. The older textbooks occasionally were supplemented by booklets with up to forty pages to give the teacher some assistance. They stated an objective for every unit and indicated which aspects should be stressed.

This new set of books was published from the very beginning with a teacher's guide for each of the three volumes with about as many pages as the students' book. In it the authors justified the selection of every object of study. For every teaching unit they specified several objectives, made suggestions for planning classroom-work, indicated new terms to be introduced, possible methods, and pointed to available films, slides, maps, and literature for further study. This clarification of the purpose and structure of the books by publisher and authors was absolutely necessary as the concept as a whole was fundamentally new to all teachers in service who required a good deal of support and guidance to be successful in their teaching.

Only two years later another new geography book appeared on the market. Its name was **"Geographie"** which also epitomized a program: to substitute regional geography by systematic physical and human geography, as the main constituent of a geography curriculum. The aim was to identify the basic concept in the variety of real life, to reduce it to elementary insights. (The predecessor had been "Länder und Völker" - Countries and Peoples).

Again the subtitles of the single volumes illustrate the change:

Grade	Subtitle of the volume		Printed
5/6	Wir entdecken die Welt	We discover the world	1970
7/8	Mit der Erde und ihren Gesetzen leben	Living with the earth and its laws	1972
9/10	Die Umwelt gestalten	Shaping the environment	1974

The first volume resembled very much the equivalent of "Dreimal um die Erde". Completely different was the second volume. In "Dreimal um die Erde" it had been the mediator between small regions (in volume 1) and issues of global concern (volume 3). The states and continents were reminders of the former regional geography. They were placed, however, in a completely different context. In "Geographie" the scale of a regional study was no primary criterion for structuring the course. Volume 2 relied solely on physical geography in so far as it had an impact on man's life, e.g. by limiting his agricultural activities. The third volume had some similarities with that of "Dreimal um die Erde", attaching greater importance to planning activities and the political and economic problems of developing countries.

The preference in grade 9/10 for planning issues derived from the student's personal environment affected the teaching strategies considerably. Inquiry was the appropriate method. Assignments such as "We plan the most expedient rural settlement" questioned the work of rural planners. Discussing by-laws for building-permits and physical planning, investigating plans and means for urban renewal required field studies in the school's neighbourhood. In part, the inquiry method was thus re-established in (West) German geographical education after its first introduction in the 1920's.

Doubtless this had been partly the effect of a third textbook set whose first volume appeared in 1972: **"Welt und Umwelt"** (World and environment). Again the title indicated a programme: to achieve an overview of the world at the age of eleven plus and concentrate later on case studies which may be near the school but require a deep and complex study on the part of the student. The volumes were not provided with a title, but their contents may be summarized in the following way (cf. Teacher's Guide 9/10, 1976, p. III and IV):

Grade	Contents	Printed
5/6	People in individual localities (world-wide)	1972
7/8	People in global systems with different socio-economic conditions. a) People's adaptation to natural conditions b) Differently coined regions under different technical, economic, social and political conditions	1974
9/10	People in planning regions	1975

The authors attempted to organize the contents on different platforms of a 'ramp' (Rampenstruktur) corresponding to the students' age and abilities. Two examples may demonstrate this endeavour (cf. Teachers' Guide 9/10, 1976, p. V):

Grade	5/6	7/8	9/10
Perspective	individual	global	functional
Topic			
labour	resources	adding to the importance of regions by mining and industry	location problems of industrial plants
nature	natural catastrophies	the face of the earth	geo-ecology

In contrast to the two previously mentioned textbook series the global perspective had gained influence by the intermediate stage e.g. when discussing the function and structure of world traffic.

For the first time a student's book did not merely give information on a certain matter but allowed the students themselves to gain geographical insight by evaluating various information sources. In brief, it was an "Arbeitsbuch". Short texts gave only the most necessary information in addition to pictures, maps, graphs, and tables. The real "body" of the book consisted of assignments, e.g. "Delimit areas with frequently occurring earth quakes", "What can be done to combat soil erosion?" (both for grade 5/6).

All was subsumed under headings that actually were objectives, e.g. "We investigate the origin of natural catastrophies" (grade 5/6), "We analyse the causes of the world-wide refugee problem" (9/10), "We investigate the reasons of the world-wide urbanization" (9/10). The intention was to make the student regard the topic to be his own interest. This worked in the beginning but became boring as time went on.

The structured material resulted in a very rigid pattern within a single teaching unit: motivation by help of the objective, a short text or pictures; information through different materials; learning activity according to the assignments; cognition when achieving meaningful learning; and transfer or application to similar situations.

To avoid the impression of too much prescription the teachers' guide suggested alternative learning strategies. The incorporation of programs (and of simulation games, experiments and projects in later editions) also intended to counteract this implication. At the same time informal tests were for the first time included in the additional material of students' books, demanding such a confining structure of the course.

Not restricted to geography were the contents of **"Der Mensch gestaltet die Erde"** (People shape the earth), published in 1972. The headings were designed to attract the student's interest, e.g. "Of giants and giant forces", "Stones growing into the sky". New was the combination of geography and history e.g. in a chapter "Our Neighbours from the South" (grade 7/8), which started with Greek and Roman history, and described the nature of the Mediterranean countries, the people, their religion and customs before discussing why so many of them left their home and came to West Germany. It was an appealing attempt to create mutual understanding on the basis of knowledge about a different culture, on a theme which particularly requires such a comprehensive approach.

Another interesting experiment has to be mentioned. Often students' books contain more material than can be used in the disposable time, or a case study does not fit well to the situation of a school and should be substituted by a better one. Consequently the possibility of selecting suitable parts out of a wide offering might be the ideal solution. **"Schäfer-Weltkunde"** (World knowledge) tried to go this way in 1974 - and failed, it is said, mainly because Ministers of Education did not approve a book that was not bound properly.

Summing up, the outstanding characteristics of students' books in geography published for the first time between 1968 and about 1975 were:

- They did not present a course in regional geography arranged in concentric circles and proceeding from Germany to overseas countries. Instead they took examples of systematic geography from all over the world from grade 5 on to allow the student fundamental insights.
- They tried to reveal patterns instead of presenting idiographic information about countries and peoples.
- They were arranged along thematic lines, were objective-oriented, and related to fundamental situations in human existence.
- The books always covered two school years.
- In accordance with the age of the students the spatial extension and/or complexity of the chosen examples grew following a concept of a ramp leading to different levels.
- Some of the themes had been objects of lessons in grade 12 or 13 in the years before 1968.
- Students' books were no longer restricted to a collection of verbal texts but comprised a great variety of materials. Consequently class recitation needed not to be the only or basic method in geography lessons.
- As "Arbeitsbücher" they allowed the student to develop intellectual skills (evaluating texts, pictures, maps, etc.) in addition to extending his knowledge.
- Students' books were only part of a larger package including a detailed teachers' guide, consumable work sheets, tests, sets of slides, and even films.
- No longer were they designed for a certain type of school but for a certain age level of students attending different school types.
- They initiated changes in methods employed by giving examples of programs, simulation games, field work, and experiments.
- They contributed substantially to a major shift of emphasis in geographic education.

2.3. The Period of consolidation

The new books were a great success. All of them sold well. "Welt und Umwelt" was reprinted yearly. However, as time passed by and teachers gained experience in using these books, criticism started. The books expected too much from students - and teachers.

To take an example. In the first volume of "Welt und Umwelt" natural disasters are the topic: "We ask how natural disasters come into existence". The breaking of dykes near Hamburg in 1962; the flooding of Florence in 1966; a ravine in the Alps in 1954; a volcanic eruption in Mexico in 1947; an earthquake in Turkey in 1970; a tornado in West Germany in 1968 - they all were the contents of **one** lesson. Certainly too difficult for eleven-year-old students to grasp the basic ideas of catastrophe in this multitude of exciting events: the 'not to be able to see the wood for the trees' syndrome.

The main objection, however, was that the books left out the learning of capes and bays. The old books had not done much in that field either but a lack of such knowledge was not to be blamed on the teacher since many places and rivers had been mentioned at some time. Now it was different. Extra time and energy had to be spent on establishing a reference system. But that was not always done.

If they had been absent, students experienced difficulties, too, as they could not make good what they had missed. Often the results of a lesson were not summarized and consolidated either. Last but not least in consequence for judging the new books were the parental objections. They did not know the "new" geography. Frequently they could not help their children to answer the questions in the geography book. This they wanted to have changed. Revised editions eradicated some of the slips. Several new books appeared on the market that put a greater weight on the methodological aspects than the former had done. Still there was no change in the general concept as the book titles reveal.

Common to many of the 'newcomers' and the revised editions was that they addressed the student at the beginning and explained the outline of the course. **"Neue Geographie"** (New geography - 1974 ff) was a good example of this process. The first two pages showed a simplified climatic map of the world which indicated the situation of the volume's case studies. The third page (still before the title page) explained the concept of "Neue Geographie" and how the student could improve his orientation in the world: by using the atlas as often as possible. The structure of the course was according to the title and need not be repeated. Excellent was the combination of air photos and maps which allowed the student an easy comparison and evaluation. At times photographs were explained by drawings.

"List Geographie - Mensch und Erde" (Man and earth - 1976 ff) was another newcomer. Its main characteristic was a basic course at the beginning of each volume, concentrating predominantly on natural geography. For grade 5 and 7 it was conceived as a dialogue between "Uncle Edward" and his nephew to render climatology in a more attractive way to the student. In general these books relied heavily on texts and allowed students only little creativity. It was a step back in development.

The contrary held true for **"Blickpunkt Welt"** (Focus world). Here certain curricular dispositions of **"Welt und Umwelt"** were developed. The aims were listed at the beginning of each unit without using a stereotyped formulation. Three to five items were spotlighted serving as "advance organizers" (AUSUBEL). Further outstanding characteristics were the well-conceived suggestions for field work, e.g. the inquiry into a farm; the analysis of the water quality of a near-by creek; and of planning reafforestation (all grade 7/8). In grade 9/10 the proposals were concerned with planning activities, e.g. analysing the quality of life in a new and an old housing area, or setting up a plan for the future development of the students' town. The case studies were events that might be a concern of the student, such as a heavy rainfall near-by, its causes and consequences.

Again, each volume had a "main message".

Grade	Subtitle of the volume		Printed
5/6	Raum und Reichweite	Space and range	1979
7/8	Raum und Regel	Space and laws	1980
9/10	Raum und Risiko	Space and risks	1981

These subtitles are a proof that a new valid concept had not been found yet. Every team of authors tried to find a more progressive (and at the same time fundamental) structure than the existing ones. However, common to all of them was the reflection of planning issues in grade 9/10 and of natural laws in grade 7/8. Even in grade 5/6 similarities of the selected topics occur more often than might be expected.

"Unser Planet" (Our planet) was published at about the same time and again organized on a somewhat different pattern:

Grade	Subtitle of the volume	Printed
5/6	Centre and periphery	1979
7/8	The First, Second, and Third World	1981
9/10	Imbalances and adjustment through planning	1982

Attractive headings were designed to arouse the students' interest: "Green Night at day time" (5/6), "Three worlds - one globe" (7/8), "How sick is the Rhine" (9/10). Helpful for the teacher was the basic pattern of the units: information (predominantly texts), followed by assignments with regard to topic, orientation, methods. Helpful for the students were the numerous schematic representations which made it easier to grasp the basic pattern and keep it in mind. Again many suggestions for field work were part of the book with several good examples as models. Games and simulations e.g. "Building the best railway net" by Cole/Beynon, were incorporated into the course.

"Schöningh Erdkunde" (Schöningh geography - 1981) was the last book-set of this period. It was a revised edition of **"Schäfer Weltkunde"** and was published when the next period was already well on its way. It was a collection of many materials, organized in a way similar to the other books, but in a less attractive lay-out.

Summing up, this period's achievements were

- to pay more attention to teaching strategies and geographical methods;
- a partial return to regional geography as part of a comparison of the United States and the Soviet Union, West and East Germany, and China, India, Japan in grade 7/8;
- yet many of the 'newcomers' had no teachers' guide and only little additional material.

2.4. The Period of differentiation

In 1979, when most of the 'preliminary' syllabi had been revised, the first books for specific school types were published. A year later special editions for the Länder followed. In the lead was **"Seydlitz"**, which had been a very popular textbook in the 1950's and 1960's. The differences in the edition for grammar schools resp. for secondary modern schools were but slight: some chapters were omitted or added, the main parts remained the same. It had, however, more the character of a textbook that gives information. A remarkable innovation was that more space was given to a single thematic unit which allowed to present the area in greater detail. This can be regarded as the first step towards regional geography.

The picture changed when Länder-editions appeared. The content of the volumes for grade 7/8 of **"Terra Geographie"** (the successor of **"Geographie"** ed. 1970 ff) illustrates this perfectly.

Rhineland-Palatinate	North Rhine-Westphalia	
No differentiation 1980	Grammar School 1982	Secondary Modern School 1982
Natural disasters	The natural law of climatic zones and mountain climates	In the cold zone
The changing earth	Agriculture in the tropics and sub-tropics: self-sufficient or market-oriented	The natural law of climatic zones
The natural law of climatic zones and mountain climates	Agriculture in arid zones	In the tropics
Weather	Interferences with ecology	In the desert
Interferences with ecology	People develop new living space	Agriculture in South Asia
The globe in space	Industrialization	In the mediterranean climatic zone
People develop new living space	Inequality on earth	Using the grasslands
Rationalizing agriculture	Forms and problems in living together	In the high mountains
Locating industry		Industrial development: resource-oriented
Problems in living together		Industrial development: traffic- and labour-oriented
		Hunger and poverty in developing countries
		Different ways of development

The new editions had to be prepared at short notice. Consequently textbook authors moved existing units hastily around, organizing them in renamed books. To illustrate a result of the reshuffle: the unit "Regulation of the Rhine", originally devised for grade 7/8 became part of the book for grade 5 in Baden-Württemberg, for grade 7/8 in Rhineland-Palatinate, and for grade 9 in North Rhine-Westphalia - with virtually the same texts, pictures, maps, and assignments. This is not the only example.

An innovation in method in this textbook were the "blue pages" at the end of the volumes, guiding the student in how to design a diagram or how to collect information on a foreign country (to make up for the abandoned "Länderkunde").

2.5. The Period of restoration

Let us cast a cursory glance at the social setting in which the already described and the following changes took place.

In periods of great national efforts values need to be fixed and positive. The Federal Republic experienced such a period from its very beginnings to the mid 1960's. Times of rapid social re-adjustment and general instability followed, in which values were changing with considerable speed. This period lasted till about 1980 when it was succeeded by a period witnessing the return to previous philosophies of life, however, without reversing all the occurred changes. This period may be called that of restoration. New curricula for schools in Baden-Württemberg in 1983 marked this turning-point clearly and had a noticeable impact on other Länder.

From 1984 onwards new students' books have been published, always as special editions for a certain Land (state) and school-type. At the end of 1984 no less than 20 new students' books for grade 5/6 had been printed for schools in Baden-Württemberg, which had taken the lead in revising the curricula. Editions for other Länder are just about to be published. Often only the outline of the course is known as yet.

The dominating characteristic of the new students' books is the revival of regional geography. Even if the heading indicates systematic geography the regional principle prevails, e.g. "Rural areas in South West Germany", or: "The town, a living space with manifold tasks" with examples from Baden-Württemberg only.

The headings of the thematic blocks in the students' books reveal the change best. They are taken from the Länder-editions of the "Diercke-Erdkunde" for grammar schools. The authors of both editions are mainly the same.

The considerable differences between both conceptions are obvious. Baden-Württemberg returns to the old concentric circles. Agriculture has a prominent role, though it is not that important in the Land's economy. The historical development of towns is excellently shown, and the authors also elaborate on an urban hierarchy which Christaller discovered in exactly this region. Industry, traffic, trade, services occur to some extent. East Germany gets only little space in the volume "Europe" - not "Germany" (!) - though the conservative Minister of Education fervently speaks about the "One Germany". Eastern Europe (except the USSR) is left out completely. There is no comparison of EEC and Comecon. Protection of the environment is a non-existing topic, as are urban renewal and planning. The conception of North Rhine-Westphalia is better balanced.

Geographical methods are well introduced. The students' book grade 5 for North Rhine-Westphalia may stand as an example. On special (blue) pages the drawing of a diagram, the evaluation of photographs, maps, texts is explained. Several "mute maps" (without inscription) allow the learning of capes and bays. The layout is excellent. Brilliant photos, covering two pages, introduce a thematic bloc. After every unit a summary helps the student to learn the main items.

This, however, is questionable, as are some of the assignments. Students in grade 5 certainly can map the shops in Main Street, but can they find a pattern in it, a regularity? Is it not too early to tackle this topic if you cannot speak about the CBD? These important gains of the early 1970's seem to be lost. There are no objectives mentioned any more. No projects, no games, no programmes. Instead of an "Arbeitsbuch" the students get a textbook whose information they are expected to learn.

It is not for the first time that a positive development in geographical education has come to a stop and is going to be reversed. At the end of the 1920's the "Arbeitsunterricht" (learning by doing) with many parallels to the "new geography" was abandoned and substituted by a mere imparting of knowledge (cf. VOLKMANN 1981).

Baden-Württemberg 1984 f	North Rhine-Westphalia 1986 f
grade 5 Orientation Rural areas Towns Rural areas in Southwest Germany Agglomerations in the Federal Republic of Germany The German coast	grade 5 Orientation Coast and North-German Lowlands Highland regions The Alps
grade 6 Central Europe The Alps Northern Europe Western Europe The Mediterranean A divided Germany in a divided Europe Europe - an overview	(grade 6 no geography)
grade 7 Climatic and vegetation zones Arid regions of the earth Tropical rainforests Polar regions	grade 7 In the Arctic Black Africa Islamic countries South and South-East Asia Latin America Climatic and vegetation zones
grade 8 India, a Developing Country between tradition and progress China Japan America Soviet Union Developing and industrialized countries	grade 8 Anglo America Soviet Union East Asia (China, Japan) Developing and industrial countries - a comparison
(grade 9 no geography)	grade 9 Europe - Variety and unity Federal Republic of Germany - German Democratic Republic: Economic centres Western Europe: Industrial agglomerations Europe's South and South-east: Less developed agrarian countries EEC and Comecon - Two economic blocks
(grade 10 no geography)	(grade 10 no geography)

3. Textbooks for grades 11 - 13 (students age 17 - 19)

The curriculum development for the last three grades of the grammar-school has differed considerably from that for the lower levels. So have the textbooks. Consequently the grouping applied hitherto cannot be used.

3.1. Characteristics of textbooks till about 1975

Up to 1960 the syllabi in all Länder concentrated on general geography with a predominance of natural geography in grade 11 and of economic and social geography in the following two grades. After 1960 the subject remained on its own in grade 11 only. In grade 12 and 13 it was integrated (with history and political science) into the new subject "social studies", which usually was taught by history teachers neglecting geographic aspects completely. Thus in grade 11 geographic education terminated. The syllabi suggested an "Introduction into geographical methods. Applied geography in the home region" (Der hessische Kultusminister 1964, p. 16). To realize this intention textbooks gave no assistance. They showed a similar structure and teaching strategy as those for the lower levels: providing information for classroom recitation but no incentives to leave the classroom.

3.2. Innovations between 1975 and 1980

A new organization of the grammar-schools' upper stage in the early 1970's led to fundamental changes with regard to textbooks, too. No longer had all students to take geography at the senior level but could opt for one subject from the social studies field. These half-year courses they might even take in grade 12 and 13. And they did.

In addition the character of the courses differed since, compared to Great Britain, they were differentiated into an O-level with three periods per week and an A-level with five to six periods per week. While the O-level courses were to counteract too strong a specialization the A-level courses were to introduce the students to scientific methods as preparation for university studies. It was not expected, that they were to study the same subject at university later on.

Since each course concentrated on one topic, e.g. "Problems in urban regions", the new textbooks followed the same pattern, even in that they specialized in one topic only. Some of them stressed the general, theoretical aspects of geography, others restricted themselves to case studies which they presented at great length. The titles of two book series reveal this well. The list indicates the year of first publication.

Raum und Gesellschaft
(Space and society)

- City and urban region (1975)
- Population growth and migration (1975)
- Industrialisation and development (1975)
- Agriculture and economic system (1973)
- Developing countries and policies for development (1973)
- Geoecology (1977)
- Physical planning - problems and aims (1977)
- World powers (1979)
- Natural forces and geosphere (1980)
- World traffic (1981)
- USA - Soviet Union (1985)
- Energy and environment (1986)

Kursmaterialien Sekundarstufe II
(Kits for senior grades)

- Problems of the city and tasks of urban policies (1973)
- Urban renewal (1976)
- World power USA and her importance for the Federal Republic of Germany today (1976)
- Jülicher Börde and Open-pit mining of brown coal (1981)
- Objects and methods of geography (1982)
- Nia-Dia - a changing African village (1982)

"Raum und Gesellschaft" has a theoretical approach with short examples serving as illustration. It is not sufficient as material in itself and requires supplementary field studies. Unfortunately methods are not dealt with extensively. In later years regional studies were added indicating a draw back from mere theory.

"Kursmaterialien" on the other hand reduce the theoretical level to a minimum. For teachers they are more helpful as the generalization can be drawn from the examples. They also assist the teacher by assignments while "Raum und Gesellschaft" only hints at some possible investigations. Both have selected bibliographies concerning the topic. An excellent volume is that on geographical methods which can be used in any course.

3.3. New textbooks after 1980

As a sign of consolidation three textbooks have fairly recently been published covering the contents of all courses.

"Fundamente" (Foundations - 1981) is a basic textbook for senior grades which is to be enriched by case studies. It concentrates on human geography, only about 1/10 of the book being devoted to physical geography. Peru serves as an example to demonstrate problems of developing countries, the USA and USSR are examples of industrialized countries with different political systems. The book refrains from determining the course by assignments though the selection of material constitutes a structure as well.

"Standort Erde" (Location earth - 1980) gives equal space to physical and human geography. It offers a rather interesting concept of organising the book by "known, grown, misused, populated ... location". It also deals with geographical methods, although too little space is given to them. The elements (pictures, schemes etc.) are selected from books for university students and are on a high intellectual level.

"Schöningh Erdkunde für Sekundarstufe II" (Geography for senior grades - 1982) is the most extensive (3 volumes) and ambitious textbook. It organizes several case studies taken from scientific publications under over-arching headings, e.g. The Interdependence of Natural and Human Forces. The examples are not detached but integrated into a specific context. The theory is not separated from reality. Assignments lead to a fairly close structure.

The most recent textbook **"Seydlitz - Mensch und Raum"** (Seydlitz - People and space) for grammar school's grade 11 reveals that regional particularities in the geography curriculum begin to dominate even in the upper grades of grammar school. Again Baden-Württemberg took the lead in reversing the school development by distinguishing a linguistic and a science branch in grade 11 anew. In both branches geography is compulsory (the subject is not taught in grades 9 and 10!), in the linguistic branch, however, it is given one period per week only against two in the science branch.

Two Länder-editions of the textbook illustrate the beginning differentiation in geographical education in grade 11 through 13 in the Federal Republic. The contents of the volume for Baden-Württemberg is set up for the science branch, in the linguistic branch the geological and physical chemical aspects are omitted.

Edition Lower-Saxony

1984

Geozones and landuses

- Forest regions
- Prairie regions
- Atmospheric circulation and climate classification
- Economic systems

Regional analyses of selected areas

- The Mediterranean countries
- The Federal Republic of India
- The shelter escarpment - a geoecological analysis
- Großburgwedel - analysis of a community

Edition Baden-Württemberg

1984

- The origin of continents and oceans
- Energy production- Main problem of our time
  - Fossil sources of energy
  - Nuclear energy and regenerative energy
  - Energy problems in developing countries
  - Population growth and standards of nutrition
- Physio-geographical foundations of agricultural production
  - Regions of low agricultural value
  - Possibilities and limits of increasing the quantities of available food.

The volume for Baden-Württemberg clearly concentrates on some of the world's major concerns, especially the energy production. This must be seen against the background of violent conflicts in this Land about the construction of nuclear power plants. However, in this grade most students have left school and miss this topic. Geology has always had an important place in this Land and meets with great interest in the population.

The other volume presents a rather heterogeneous mixture. Its first part reminds one of equivalent courses before 1970, the second part attempts a return to regional studies with no plausible arguments for the given selection.

Conclusion: Textbooks for senior grades were never questioned the way textbooks for lower grades were. Some new thematic fields were added. The books do mention some basic methods, though on a theoretical base only. More demanding statistical techniques, e.g. standard deviation and scattergraphs are not employed. An Applied Geography is initiated by some of them only. Even at this stage differences between the various Länder tend to grow.

4. Atlas and curriculum - an overview

Despite the high production costs - (the development of the **Alexander Weltatlas Gesamtausgabe 1976** required an investment of 21 Mill. DM (Thiele 1984, p. 269) - there are more atlases today than in 1970. While before 1970 one atlas more or less dominated the market and geographical education (minor editions are not taken into consideration here), the following years saw the emerging competition of four publishing companies. Two atlases were thoroughly revised, hardly resembling the older editions, and two more were newly devised and edited. In addition the geography teacher benefited from the presence of an extra atlas with satellite photos.

As was the case with geography textbooks, a fundamental change in the conception of atlases occurred around 1970. Considering the long production time of an atlas of up to ten years this is astounding, as by then the discussion of geography curricula had not been terminated. On the contrary. The first new editions of atlases definitely had a great influence on the curriculum development, as they promoted the ideas of the "new geography".

Before 1970 an atlas usually contained a fair number of physical maps relating the topography, the main rivers or cities of a country or continent, and thematic maps on various topics. The relation was about 1 to 2. In atlases edited after 1970 at the most one in ten maps was a physical map, thematic maps clearly dominated. This in turn led to a considerable cut back of place names (because of cartographic reasons) which reduced the atlas's function as a gazetteer of place locations.

Among thematic maps those showing economic aspects, transport and communication clearly took the lead, occupying about half of the available space. They were followed by maps on natural geography (about 1 out of 5 maps). Less space was given to settlements (1 out of 7 maps), population (1 out of 8 maps) and historic situations (1 out of 14 maps) (for more detailed informations see THIELE 1984). Generally speaking the variety of themes grew. New were e.g. maps on physical planning, tourism, education, the urban structure, reflecting an intensified interest towards applied geography in both geography as a science and as a school subject. The character of thematic maps changed also. More maps contained quantified data instead of qualifying data, e.g. the production of a coal mine or a power station instead of indicating merely their location. Fairly often these maps were supplemented by non-cartographic material as diagrams, to demonstrate changes that occurred over a certain period, or by profiles. Altogether a trend can be noticed towards more complex maps e.g. combining the relief, soil quality, land use, and subsequent treatment of agricultural products.

Virtually all atlases were provided with supplementing statistics, partly revised yearly, and distributed at no cost. Further additional material included teachers' guides, giving an introduction into the conception of the atlas, an evaluation of the maps, occasionally lists of teaching objectives, and literature for further information.

Completely new but common in all atlases was the systematic introduction for students into map reading by way of comparing air photos and maps of the same town or region and maps with different scales. Although map reading is already practised in elementary schools developing this skill in grade 5 is absolutely necessary. At the same time it shows the wide range of the new atlases' contents, devised for students in grade 5 through to 13.

As the sequence of maps did not always follow the pattern Germany - Europe - Africa - Asia - Australia - North and South America several aids were required to open up the contents of the atlas for the student: e.g. tables of contents, indices of names and terms, map surveys for quick finding of a certain region. To assist the student in the correct pronunciation of foreign names the atlases provided information about the pronunciation rules of the most important languages or used phonetic transcription in the index.

A short characterization of the four new atlases follows including the predecessors and later, improved editions.

4.1. Diercke Weltatlas (1974)

The 185th edition of the oldest German atlas was not the first of the new atlas generation. This honour must be given to the **Westermann Schulatlas Grundausgabe** published in 1969. The editorial management being the same as of the **Diercke Weltatlas** it clearly had the role of a guinea-pig before obtaining the renowned name of Diercke.
New was the smaller size which fitted better into students' bags though it was not ideal from a cartographer's point of view. The increased number of thematic maps contained quantified data in the economic field only. References to similar maps on other regions were printed in red and stimulated a comparison as did many maps showing the same region "Once and Now". Consequently the scales of those maps had to be the same.

A further innovation was the integration of satellite photos and charts of typical weather situations as complement to climatic maps. A completely new topic was "Problems of an industrialized society", showing the polution of rivers, the noise molestation in a city, the migration of "Gastarbeiter", the changed deployment pattern. The strong influence of school curricula (at that time still in the conception phase) became obvious.

Not all innovations of the **Westermann Schulatlas** were adopted by **Diercke Weltatlas**. The references to other maps were dropped as were maps with some pictorial signs. Instead the **Diercke Weltatlas** confined itself to abstract signs only, which allow a better presentation of quantified data. Often it was a quantification in terms of degree, e.g. good soils - bad soils, but also in precise quantities if it was meaningful, e.g. the number of guest nights in a tourist resort.

More than a decade later the same company - with a new editorial management - produced another atlas, **Heimat und Welt** (Home country and the world 1985) that contained more physical maps, employed pictorial signs and references to supplementing maps. The title suggests methodological intentions. And in fact the introduction into the understanding of a map is differentiated into physical and thematic maps and establishes a better comprehension of the signs by contrasting reality (photos) and abstraction (signs). A thorough explanation of signs helps the student to get a correct understanding, e.g. by comparing a certain noise level to the roar in a football ground.

4.2. Alexander Weltatlas (Gesamtausgabe 1976)

This was a completely new atlas with a fundamentally different conception. Its main characteristics were so-called "basic maps" which combined relief, land use, settlements, communication and industry in one complex map. These "basic maps" formed the first part of the atlas which was followed by a second, comprising thematic maps on single geographic aspects such as "Population growth and migration in Europe".

The cartographic language demonstrated an excellent hierarchy of signs representing industry. To name two examples: the same sign stood for all kinds of mining which were differentiated by colour. The various ores on the other hand were distinguished by their respective chemical symbol that was printed into the sign. Manufacturing was represented by a square. If it was pink it meant metal industry which again was differentiated by stylized pictorial signs inside the square so as to define e.g. shipyards, car plants or aircraft construction. By using the same colours (pink) for iron ore, steel production and shipbuilding the factual connection was shown even on the map.

Difficulties in reading the maps provided the areal signs for land use since the discrimination of the colours was not always easy. The underlying relief portrayal by shading changed the colour gradation on the map. Special crops such as tobacco-growing and horticulture were shown by stylized pictorial signs. Very helpful for students were the inlaid maps of Germany which allowed the comparison with the size of a continent thus ensuring a correct impression. Excellent was the combination of climatic maps and diagrams in arid areas.

A new edition of the atlas in 1982 improved the colour coding of areal signs and added some aids for the user - apart from several new maps: explanation of selected terms, a comparison of air photos and topographic maps, references to other maps, and coloured margins for an easy finding of thematic maps.

4.3. List Großer Weltatlas (1975)

This atlas had a predecessor. Since, however, the thematic maps were virtually new, the atlas itself may be called a new edition. The first part consisted of maps on themes taken from general human geography which was followed by a regionally grouped sequence of maps with partly the same themes as in part one. Noticeable was a fair number of maps on historic and/or political issues such as territorial changes in Central Europe since 1871, languages and people in Africa.

Rather negative was the employment of pictorial signs especially on maps with small scale. As the size of the signs left no space for place names it was difficult to localize industries. In the field of agriculture an extensive generalization was required. The areal extension of a certain landuse remained vague. Even worse was the employment of areal signs to denote industry giving a misleading impression of the country itself. On some economic maps important information was missing as, e.g., the iron ore mines in Western Australia on the world trade map, resulting in an altogether distorted picture. The economic maps were rather poor examples of cartography.

A new edition in 1980 brought about some changes though no major ones.

4.4. Unsere Welt Große Ausgabe (1970)

This atlas, too, employed pictorial signs. However, in a far more diversified manner than did the **List Weltatlas**. So it was quite possible to evaluate the thematic maps and get a clear picture of the region in question. If too many signs came together, which occasionally happened, the maps became somewhat difficult to survey. Obviously this can hardly be avoided when using large pictorial signs.

One remarkable characteristic was the excellent introduction into map reading. It was accomplished by placing a bird's-eye view map, an economic map and a physical map next to one another. Thus the student could see which reality a sign stood for.

Another remarkable point was the juxtaposition of physical and economic maps. By doing this the economic maps did not need to contain the relief which on the other hand was important e.g. for the land use. Thus the economic map did not become too complex. This concept was not kept for larger regions.

The latest edition of this atlas in 1984, renamed **Seydlitz Weltatlas**, strengthened the concept of juxtaposition. A further change concerned the introduction into the understanding of maps. It employed an air photo inlaid into the appropriate map. Several different map types demonstrate for the student the various intentions of the map: either to inform about the relief, the economy of a region, or mainly about its roads, useful for the motorist. The greatest improvement, however, was achieved by stylizing the pictorial signs, which resulted in a clear arrangement, easy to read and to evaluate.

4.5. Diercke Weltraumbild Atlas (1981)

Landsat 1-pictures were the basis of this new kind of atlas. They were reproduced in a green version which allowed a better distinction of details. In addition place names and boundaries were drawn in some pictures while most of them were juxtaposed with maps, thus enabling the student to evaluate the pictures himself. Compared to a map the advantage must be seen in the "reality" of the pictures as far as phenomenological aspects are concerned, e.g. the different land use patterns in East resp. West Germany or settlements in the Alps or the eruption of St. Helens. As these themes were dominant the atlas was structured accordingly following the pattern of general geography.

5. Conclusion

Nowadays the publishing companies try to offer the geography teacher a complete program, i.e. textbooks and atlas either by adding a new textbook (as was the case with **Diercke Weltatlas**) or by renaming the atlas (as was the case with the **Seydlitz Weltatlas**). The idea behind this policy may be that, once a school has made a choice, it will more or less be bound to the products of that publishing company since e.g. the atlas with its fairly long 'lifetime' may influence the choice of a new textbook later on. A rather ambiguous consequence.

From a didactical point of view producing both a textbook and an atlas by the same publishing company offers great opportunities: both can be attuned to one another. It is this very point that has not been arrived at as yet. Rather frequently maps in textbooks are taken from the corresponding atlas. This reduces printing costs; at the same time, however, it may make the atlas obsolete. The same holds true if small inlaid maps in the textbook indicate the location of a case study. Then there is no necessity to use the atlas any longer. Teachers, with strong support by parents, tend to neglect the atlas since, especially in the lower grades, it means to carry a heavy book less to and from school.

A clear functional differentiation between geography textbook and atlas is required which will not loosen but rather strengthen their interdependence. A map showing the crop rotation on a farm in North Dacota should no longer be part of an atlas. Its proper place is in the student's book. Maps in an atlas are to be restricted to contents with a longer 'lifetime', e.g. the land use in a country.

Regarding the weight of an atlas, important from the medical point of view, the choice should not be to have one atlas for grade 5 through 13 (as is the case now) or to have different atlases at different levels (as some people suggest). Instead the atlas should grow as the student does, i.e. the atlas for grade 10 should comprise the atlas for grade 5 which in its turn is to be a selection of maps from the atlas for grade 10.

The convergence of textbook and atlas since the mid 1970's, initiated by the "new geography" has to be stopped and partly reversed since it neglected the characteristics and possibilities of essentially different media. With the competition among publishing companies becoming harder a further concentration for economic reasons is likely though, at present, the choice in books and atlases still can be regarded as being excellent.

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A Review of Research Activities in Geographical Education in the Federal Republic of Germany 1975-1984

A. Background

1. Justification for the choice of subject and period of review

Even allowing for the declining impact of most scientific research findings over a three or four-year time-scale, it seems both reasonable and necessary to check after a certain lapse what have been the critical issues over the period, and what has been accomplished. To do this is arguably more important in a relatively young branch of science. The period chosen is an appropriate one for such an appraisal, for during it research in geographical education in the Federal Republic has begun to take some important steps.

Some important influences can be identified:

a) The RCFP (German Geography Curriculum Projekt), initiated by GEIPEL (1971).

b) The diverse attempts from 1971 on to systematically plan geographical subject matter for use in schools especially by working on programmed teaching, attempts which SCHRETTENBRUNNER (1978) assesses as the most decisive impulses to viable research into the teaching of geography. The effectiveness of these attempts he ascribes to
   (i) the formulation of objectives;
   (ii) the analysis of teaching methods and detailed translation into instructional materials, and
   (iii) the prospect thereby of removing interfering variables.

c) The establishment of chairs of geographical education in universities and other tertiary institutions in the different Länder of the Federal Republic during the period under review, together with the improved resources provided.

   Since, according to German tradition, the teaching of a subject at university level is not possible without research being undertaken in the subject by those teaching it, the new professors were obliged to continue the tradition. This is reflected in the fact that of the 200 or so papers reviewed for this present essay, about 99% were produced by persons active at tertiary level.

d) At the beginning and end of the period under review symposia were organised which have stimulated research:

(i) the Freiburg symposium on quantitative methods in the teaching of geography, organised on a federal level by HAUBRICH (1976); and,
(ii) also by HAUBRICH, the Freiburg pre-congress meeting of the International Geographical Union in 1984, on "The Perception of People and Places through Media".

2. Definitions of "Research" and "Science"

Whether a scientific type of research into the teaching of geography is necessary may be open to discussion. In the author's mind, however, scientific endeavours are necessary in order to counteract the reliance on mostly subjective and idiosyncratic experiences of individual teachers, to provide a more general knowledge of teaching processes and their background, and to help to develop an improved teaching performance based on a better understanding of the constituent variables making up these processes. Clearly one of the main problems for geographical education research lies in both unravelling these variables and a subsequent new synthesis.

Defining research as a search for what is not yet fully and consciously known and understood to make it a little better comprehended, then it follows that it involves the search for answers to specified problems. Research has to be conducted on several levels:
(a) the level of theory-building (in the sense of finding research-directing hypotheses and the quest for explanations);
(b) the level of information collection, through interviews, for example;
(c) the level of case studies;
(d) the level of quantitative design, with generalisations expressed in terms of probabilities, for example SCHRETTENBRUNNER (1976, 1982 and 1984), NIEMZ (1977) and HEILIG (1982).

Whatever the level chosen, the aim remains the same: to attain more secure knowledge about the nature of the interaction between the subject, the teacher and the pupil.

3. Fields of research in geographical education (see Table)

As has already been pointed out, this interaction finds itself within a complex system of variables, in which many background variables are significant, such as for instance values and what is regarded as key issues in society. This system can probably best be represented by a tabulated matrix, with the compartments identified on the basis of previous work by the author (BIRKENHAUER 1974 and 1976). The variables are grouped within the four levels described above. The reviewed research papers are then inserted into the suitable compartment.

References to the complexity of research can be found in the papers of HEILIG (1982) and ZIEGLER (1982). Though it is dangerous to come to simple conclusions and, as it is necessary "to make a lot of reductions to methodological and theoretical claims" (SCHRETTENBRUNNER 1982,p. 292). Schrettenbrunner continues: "Representivity as an aim in order to claim a basis for the results of research into the teaching process is in all cases to be judged as unobtainable and therefore has to be dropped" (p. 293). The one decisive problem about representivity is that research depends on the goodwill of the teachers who are ready to participate or help in the research. As a rule, teachers who are willing to participate are usually the ones who are especially suited to engage students positively in the work as well. This means that a transfer of the results to less able and/or less well taught students is suspect, a point to which NIEMZ (1978) also has drawn attention. Although such reservations must be made, the results nevertheless intimate what can be achieved under favourable circumstances.

Fields / Kind of activity	1	2
	Curriculum and objectives	
	Curriculum: research, grading	Objectives: hierarchy, differentiations
1: Theories and concepts	Spatial behaviour as main aim for geographical education (KÖCK 1980) geographical objectives (HENDINGER 1980); environmental values orientation (HAVELBERG 1982); grading of systematic curriculum "columns" (RICHTER 1976) - for upper classes (KIRCHBERG, RICHTER 1982); geographical complexity (KÖCK 1984)	Geography and educational theory (BIRKENHAUER 1979; BIRKENHAUER et al. 1978; HAHN 1974; KIRCHBERG 1980; RICHTER 1976; KÖCK 1980, 1984)
2: Review of subject matter (qualitatively, quantitatively)	Change of emphasis since 1960 (HARD 1977, 1978, SCHULTZE 1979, 1980) foreign comparisons and comparisons of the developments in the German Länder as well as East Germany (JANDER 1976, SPERLING 1977, KÖCK 1977, 1979, 1980, 1981, 1982)	Didactic matrices (BIRKENHAUER 1947, 1979; OESTREICH 1978, RHODE-JÜCHTERN 1979, 1981, 1982) curriculum tasks and concepts (HENDINGER 1981, SCHRAND 1978, 1979, 1981)
3: Empirical checkings A (case studies, qualitative procedure		
4: Empirical checkings B (quantitative procedures) a) descriptive	Curriculum contents (HARD 1978, KÖCK 1977)	
b) mathematical	Curriculum decisions: reality, performance; advocacy of pragmatism (NIEMZ 1984); curriculum contents (HARD 1978)	

Fields / Kind of activity	3	4	5
	Contents		
	Systematic-, regional-, physical-, human geography	Curriculum sections, esp.: learning capes and bays, knowledge of places	RCFP (German Curriculum Research Project)
1: Theories and concepts	Regional geography as a basic educational task (BIRKENHAUER 1981, 1988 a)	The meaning of geographical position within global space (FUCHS 1977, 1983; KIRCHBERG 1977, 1980; BIRKENHAUER 1981 resp. 1971, SCHÄFER 1979, JÖCK 1984)	Reasons, development of aims and themes (GEIPEL et al. 1975)
2: Review of subject matter (qualitatively, quantitatively)	Applied geography in school (BIRKENFELD 1979, VOLKMANN 1982)	Systematisation of learning of capes and bays (FUCHS 1977, KIRCHBERG 1977) patterns of spatial orientation (HAHN 1982)	Reports on progress (SCHRETTENBRUNNER 1975, 1982) still missing: a systematic comparison of all results in general and detail
3: Empirical checkings A (case studies, qualitative procedure			
4: Empirical checkings B (quantitative procedures) a) descriptive	Difficulties of climatic geography in standards 5 a. 6 (NIEMZ 1977, 1978b)	Considerable want of knowledge of places all over the world throughout all ages and all types of school, severe want of knowledge about East Germany (CLOSS et al. 1977; ACHILLES 1979; BRUCKER 1980; KROSS 1976; NIEMZ 1978 b); no difference in performance lack between students instructed along the lines of "old" vs. "new" geography; main variable of success: teachers' drilling practices (BRUCKER 1980)	Stereotypes of adolescents regarding African countries (ENGEL 1986)
b) mathematical		Considerable want of knowledge regarding East Germany and and Europe (NIEMZ 1984)	Teachers knowledge of RCFP: practically unknown; reasons (PFLUGER 1983); balance of subject (JUNGFER 1976) success of new strategies implemented by RCFP: not possible to ascertain because of lack of clear objectives (ZIEGLER 1982)

Fields / Kind of activity	6	7	8	9
	Human aspects of teaching			
	Teacher behaviour; attitudes of teachers towards students and subject	Learning conditions (cognitive and affective domains) structuring the subject matter	Students: thinking, language, concepts, spatial perception	Psychology: problem solving, learning success, knowledge development
1: Theories and concepts		Spatial concepts (KöCK 1984, DAUM and SCHMIDT-WULFFEN 1980) models, systems and synergetic approach (KöCK 1984) grading of concepts (BIRKENHAUER et al. 1976)		Principle of "From here to there" is to be integrated into "new" geography (BIRKENHAUER 1981)
2: Review of subject matter (qualitatively, quantitatively)	Science orientation, balanced consideration of geographical subject-matter: both physical and human (SPERLING, CLOSS 1976); objectives as means of orientation for teaching approved (HARTL a. ZIEHER 1982)	Models (KöCK 1978, 1979) models and spatial concepts (BIRKENHAUER 1979, 1981, 1983 b); affective objectives: changes and grading (HAGEN 1975, HASSE 1976, BIRKENHAUER 1982); value concepts (BöHN 1980, 1982)	Forms of thinking in general and in school geography (STROPPE 1983); spatial perception (SCHRETTENBRUNNER 1979, SCHAFER 1980, 1984)	Adequateness of objectives (NIEMZ 1977, 1978)
3: Empirical checkings A (case studies, qualitative procedure)		Grading of complex cognitive concepts and structure rarely achieved by curriculum designs, well achieved in school books (KAMINSKE 1984)	Acquaintance with concepts (BIRKENHAUER 1983 d, DRESS 1983); semantic consciousness (KLOTZ 1983); vagueness of concepts (HAHN 1982)	
4: Empirical checkings B (quantitative procedures) a) descriptive	Demand for a balanced curriculum (physical vs. human geography) (SCHOLL 1977); knowledge of places dependent on teachers (BRUCKER 1980)	Spatial configurations: attraction for sudents (KöCK 1982, 1984)	learning of placenames facilitated by proverbial settings (CLOSS 1977); development of spatial perceptions (SCHAFER 1980, 1984); spatial perceptions: conditions of clear visualisation (SCHöNBACH 1982)	Adequateness of objectives (NIEMZ 1984); learning success (BAYER 1983) geographical knowledge before 10 (BREITENBACH 1982) from the child's seeing to that of grown-ups (BIRKENHAUER 1984)
b) mathematical			Boys better than girls in spatial matters (SCHRETTENBRUNNER 1978, BRUCKER 1980, BAYER 1983, BIRKENHAUER 1984); progress in spatial perception from the age of 8 (SCHÄFER 1980, 1984)	Development of spatial concepts (age 6 – 10) (KOSMELLA 1979); concepts of time: difficult for the ages 6–7 (SCHRETTENBRUNNER 1976 c)

10	11
The affective domain	
Perception studies	*Students: motives, biases, perceptions of subject ...*
Environmental aspects, possibilities for ecological concern (HASSE 1982)	*Possibilities for "fertile moments" (STROPPE 1982) underdeveloped countries: possibilities to engage students (KROSS 1978, SCHMIDT-WULFFEN 1981)*
Image of a city, perception of city problems (HASSENPFLUG 1977)	
Judgement of landscapes, spatial perception (BIRKENHAUER 1984); the function of experiences (SCHRETTENBRUNNER 1976c, BIRKENHAUER 1984); class and perception (ORTNER 1978, BIRKENHAUER 1984) *Dependence on social cliches (FICHTINGER 1984) basic concepts (HARD 1978); city problems and planning (KREIBICH 1977, HARD 1971, 1984); environmental consciousness (BRAUN 1983)*	*Perception of foreign countries (NEBEL 1984, WILLIAMS, HAHN et al. 1984, HAHN 1982, BÖHN 1982, KROSS 1978, KOCK 1982, 1984, ENGEL 1980)* *Interests: decisive stage age 11 (VOIGTS 1977; cf. BIRKENHAUER 1983a); drawn by diversity of spatial objects, not by spatial organisation problems (Kock 1982, 1984, KAMMERMEIER 1979); positiv interest in subject (LEUSMANN 1976 a u. b, HEILIG 1982, 1984)*

Fields / Kind of activity	12	13	14	15
	Lessons and success	Ways of teaching	Particular methods	Media
1: Theories and concepts			Quantitative methods (SCHRETTENBRUNNER 1978, KOCK 1977) comparisons in geography (DÜRR 1981; HAHN 1981; STROPPE 1981) inductive and deductive methods (KOCK 1981)	Criteria for grouping media (FICK 1980)
2: Review of subject matter (qualitatively, quantitatively)	Tests (NIEMZ 1976); use of caricatures (BRUCKER 1976); motivating for teaching phases (WINKLER 1977); beginnings for lessons (STEIN 1981)	Excursions (KNIRSCH 1979); museums (SPERLING 1981 HENDINGER 1984)	Basic skills in geography (BIRKENHAUER 1978 ff.)	Criteria for grouping media (FICK 1980) criteria for judging and planning of schoolbooks (WITTIG 1975, VOLKMANN 1975, 1984, SPERLING CLOSS 1976); using the sand box (indoors, outdoors) (HAAS et al. 1981); school TV (HAUBRICH 1981); using maps (RAUCH 1976); using satellite fotos (BRUCKER 1982)
3: Empirical checkings A (case studies, qualitative procedure)	Home-tasks (KIRCHBERG 1982); interactions (HAUBRICH 1976, 1978; JÄGER 1978) planning of courses for A-level (RHODE-JÜCHTERN 1981)		School books: too many concepts (KLOTZ 1983) forming of hypotheses (SCHRETTENBRUNNER 1981) introduction to maps (RAUCH 1976)	Introducing thematical maps (GEIGER 1976)
4: Empirical checkings B (quantitative procedures) a) descriptive	Semantic profiles for testing of teaching success (BRAUN 1977); usefulness of multiple choice questions (KOCK 1977)	Success of programmed learning less than conventional teaching (GEIGER 1977)	Difficult skills: use of scale, planations, size of areas (BUSSE 1980, SCHRETTENBRUNNER 1976c) up to standard 6 (RAUCH 1976) special skills for using maps (RAUCH 1976)	Schoolbooks: how to improve them systematically (NIEMZ 1978b, 1984); using schoolbooks for deeper learning (SCHOLL 1977) adequateness of school TV on broadcasting lessons for students (BREITENBACH 1982); understanding maps (RAUCH 1976); usefulness of rough drawings (HAHN 1982)
b) mathematical		Growth of knowledge by excursions: not better than by slide-aided lessons (WATZKA 1978); branched programme too difficult (SCHRETTENBRUNNER 1979 a a. b)		Ordnance survey maps: too difficult for standards 5 – 7 (SCHRETTENBRUNNER 1976 c); growth of knowledge by school TV not as good as by using printed materials (BORVENICH 1977)

B. Some outcomes of German research into geographical education

1. General

The attached table allows a quick overview and by this there is given an impression of the general nature of research. In most cases, the brief remarks inserted in the compartments are sufficient to give an idea of what the particular project is about. Where the results are too complex or intensive for so short a characterisation, they are discussed at greater length below. Specific fields are identified according to the appropriate section in the table.

After the onslaught of curriculum theory between 1970 and 1975, there has been a shift towards more practical issues. Moreover geographical educationists have looked to the support offered by geography as a science rather than returned to procedures based on curriculum theories as such (see the papers by KÖCK especially). There has also been a tendency to turn back to the learning of place-names, rather neglected in the heady days of the "new" geography. But it would be wrong to suggest that any fundamental chances have taken place so far within geographical education. It is not so much a case of the polarisation of geography as a science as against place-name geography, or of the latter against geography based on ideas derived from curriculum theory, but rather an attempt to find, albeit gradually, successive solutions to problems as such approaches appear on the market. It is then possible to see if they can be applied and whether they are more successful than previous ideas or procedures.

2. Specific fields

(a) **Number 4: Curriculum Content - Knowledge of Places**
BRUCKER (1980) looked into the proficiency of students at the end of Standard 10 at remembering place-names and the locations of places. He operated with two groups. One had been taught according to the old regional syllabus, and the other according to the new curriculum. He first found that boys had a broader knowledge than girls; secondly, that any type of geography teaching contributes towards a better knowledge of place-names than no geography lessons at all; thirdly, that differences in knowledge do not depend on the nature of the syllabus but on what teachers do in the actual lesson. Differences within

the groups do not seem to depend on whether the teaching was "good" or "bad" (whatever that means) but on the initiatives a particular teacher really takes. The place-names of central Europe are remarkably badly known, except those of the Land in which the school is located. On the other hand, the names of the continents and of the countries of Europe and their capitals are rather well known.

NIEMZ (1984) in a project covering 20 000 geography lessons in Hesse, the most intensive of all geography research projects to date, has found out the following:

(i) the choice of the subject matter for teaching is more dependant on the geography books used in the schools than on the actual syllabus;
(ii) within lessons, "thematic" geography, illustrated by regional examples, has tended to replace regional geography, although topics taken from regional geography, including learning capes and bays, remain prominent, with 21% of time spent: the bulk of all topics;
(iii) the regional geography of western Europe is sparsely covered and that of East Germany virtually not at all;
(iv) there has been no up-rating of the subject as a consequence of the pronounced stress on social geography within the new syllabus;
(v) physical geography is neglected;
(vi) field work has increased, as a result of the influence of new school books;
(vii) the subject matter "curriculum-makers" think essential has to be reduced because of a severe lack of time to achieve a complete coverage;
(viii) the "basic needs" approach, as BIRKENHAUER (1974) had predicted before has not made any impact on decision-making.

From his findings NIEMZ proceeds to make pragmatic proposals for a realistic syllabus.

(b) Number 7: Learning conditions - structuring the subject matter

One of the basic principles for the structuring of geographical subject matter is contained in the maxim "from the simple to the complex", a point with which most educationists will agree. Nobody knows, however, beyond personal, subjective hunches, how complexity can be measured and treated in an operational way.

KÖCK (1984), therefore, endeavoured to find out by what the complexity of a topic can be measured: i.e. the number of relations comprising a spatial topic. Within a lesson, however, the complexity of a topic for a particular individual seems to be the major factor. In this context, KAMINSKE (1984) has tried to illuminate the issues. He defines "complexity for the individual" as the amount of information needed before comprehension is achieved. Of course the average amount of information thus required for any particular group has not yet been discovered. While it would take a long time to carry out such a project, it would seem well worth trying. Possibly the problem of placing particular concepts in particular classes could be solved more securely by such a procedure than hitherto has been the case.

Apart from models (in the sense of a representation of theories) as a means of cognitive structuring (see authors' names in the Table), KÖCK (1980) at the same time as DAUM and SCHMIDT-WULFFEN proposed similar ideas, and tried to find out about the way students themselves are interested in spatial concepts, and whether geography in school might be based from the beginning on the "spatial organisation approach". Therefore Köck attempted to discover which spatial configuration motivates students to take an interest in geography. He found that pupils respond better to examples from clearly structured and varied regions. They are clearly less interested in spatial organisation per se or in functional rules. They prefer a variety of spatial settings as well as explanations for such settings. From this it would seem sensible to place a variety of spatial examples as a starting point and treat spatial organisation only as a later step.

(c) **Number 8: Learning conditions: student thinking**

German geographical educationists traditionally stress the necessity of retaining geography in school particularly because of the value "geographical thinking" it has to offer. STROPPE (1983) tried to find out what "geographical" thinking is really about. He started from what thinking means (mental working on informations in a mentally directed process) and then systematized the most commom forms. Specific geographical forms of thinking according to him include

(i) individualizing (grasping the individual characteristics of a geographic setting);

(ii) ordering (comparing geographical situations);
(iii) processing and genetic thinking (detection of developments and processes with impacts on geographical settings);
(iv) functional thinking (functional relationship of facts and concepts), and
(v) general spatial thinking.

Using materials from various school textbooks he catalogued a substantial body of concrete examples.

Using a questionnaire, DRESS (1983) sought to discover how pupils between Standards 6 and 12 became familiar with urban concepts. It seems that the clarification of concepts is not much practised in German schools. Thus students were not schooled in grasping abstractions in a formal sense. Even students higher up were not well versed in formal thinking operations. They often continued to use the oversimple formulations acquired lower down the school. DRESS therefore advocates a more conscious approach to concepts. To do this the teacher should start with interesting examples and carefully proceed to the key ideas behind the details rather than the other way round [see also KÖCK (1982) and STROPPE (1982)].

BIRKENHAUER also (1982), on the basis of material amounting to about 41 000 words, from age levels between Standards 5 and 11 and in all types of schools, showed that it is not the terms themselves that are difficult for the student but that the main difficulties rather stem from the unfamiliarity of the underlying concepts. Put the other way round, the more familiar newly introduced concepts are, or appear to be, the more they tend to be used by pupils as a matter of course, even with concepts theoretically regarded as "difficult" by the teacher. Therefore the teacher has to create a setting of familiarity when introducing a new concept. Allowing pupils to rephrase new material in their own words can be of great help (see also HAHN (1982)). If a familiar setting for a new concept is not available within the experiences of the pupils, then it should be the teacher`s task to simulate one in a lively and compelling way. Only such geography teaching will also help towards a better language competence among pupils . Mere verbalism is no help at all. In order to be able to grasp concepts and gain insights pupils have to be able to interpret a particular context by discovering the rules applying to that context. The ability to do this seems to be connected with the development of linguistic proficiency. As the material showed, such proficiency will develop from a rudimentary base between the ages of twelve and fifteen. It is then that sentences appear with clauses introduced by "because", "in order that" and the like. However it would appear that, up to Standard 9, more simple clauses are preferred, using such expressions as "if so, then so" or "the more of this, the more of that". It appears that only from Standard 10 on the teacher can take for granted that many students will be able to deploy abstract concepts adequately. From Standard 8, pupils will display an increasing consciousness of values as well.

Using an extensive questionnaire, KOSMELLA (1979) researched the development of certain important thinking skills. She differentiated between six domains :

(i) comprehension of concepts
(ii) spatial knowledge
(iii)grasp of structures
(iv) grasp of functional insights
(v) recognising processes and developments
(vi) spatial combinations of landscape characteristics.

Regarding simple concepts (such as home, hill, river, ocean, island, coast, desert, tropical forest, harbour), children showed up distinctly better in Standard 3 than Standard 2. Surprisingly, town (city) and farm remained difficult.

Knowledge about distances, directions and the situations of neighbouring countries increases steadily from form to form. Simple maps and the symbolic value of colour coding are readily accepted and understood even by the youngest pupils. Only gradually do they succeed, however, in seeing the interrelationships of two or more spatial characteristics. If pupils are asked to consider several characteristics, especially in functional contexts, and if the contexts are at a remove from the familiar at the same time, then they have great difficulties, even with only two of them. If, on the other hand, the same subject matter is presented to the pupils in familiar contexts, then it is recognised far more easily by them. In this way the insight that population densities and industrial locations are interrelated can progressively be refined from Standard 2 upwards, as can relationships between population densities and built-up areas from Standard 3. Given the task of drawing road tracks within a simple topographic setting, many correct solutions are offered. But if the topography is presented by using a map only, many wrong placings occur. Processes operating over a short time-scale and thus capable of being taken in at a glance, as it were, are readily grasped, those over a long time-scale, however not so. The ability to "place" a thing within its wider surroundings is difficult to develop. This makes itself felt on all scales, whether for city quarters or for settlements as a whole. Yet in many geographical tasks, such conceptions are essential to proper understanding.

So far as foreign countries are concerned, there is spontaneous interest from Standards 1 to 4 (see SCHÄFER (1980)), while in the case of traffic studies, terms such as traffic nodes must be regarded as difficult even in Standard 5, on BAYER`s evidence (1983). Bayer suggests that the fault lies with initial introductions to these terms in settings unfamiliar to students.

d) **Number 9: Learning conditions - concept development and problem solving**

As we have just seen to develop familiarity for new situations and concepts seems to be one of the most important tasks for the geography teacher. This conclusion is strengthened by the findings of BREITENBACH (1982) on the basis of material gathered from 3000 pupils in Standards 4 and 5. Everything of significance with respect to the daily needs of pupils, such as foodstuffs, raw materials, forms of energy and transport, etc., was well understood by them. Similarly they possess precise criteria for the valuation of residential areas, such as peace and quiet, recreational possibilities, access to shopping facilities, quality of dwellings, and social location as an index of residential preference. A lot of basic knowledge is available at the beginning of Standard 5 which in BREITENBACH`s view can be capitalised upon so that at a straightforward level simple planning problems and their political impacts can be understood.

e) Number 10: The affective domain: perception studies

The introduction of perception studies as an important addition to school geography was the work of GEIPEL (see FICHTINGER et al (1974)). A preliminary look at associated methods and concepts was undertaken by SCHRETTENBRUNNER (1974). In the following years , the approach became diffused, culminating in the theme given to the IGU Pre-congress Symposium at Freiburg in 1984. Such a development can not be thought surprising, for starting from the child`s perception of things naturally is an entirely reasonable didactic approach.

One prime starting point (especially after the "new" geography made itself felt) can be the younger children`s perception of their native towns. Using children`s drawings of city characteristics, HASSENPFLUG (1977) deduced that pupils focus on the CBD when thinking about the concept of "town". In this, children obviously are guided by their interests and needs. It is only at about the age of thirteen that they begin to show a certain detachment and the image-value of the city itself becomes prominent. In generally well-understood areas they are capable to associate conflicts and traffic problems.

In a very detailed and extensive study of Munich students in Standards 6 and 8, KREIBICH (1977) found that the perception of problems is surprisingly limited to a very narrow city segment which isrelated to their daily life in its spatial setting within these limits, however. Children between the ages of nine and fifteen are able to distinguish "diagnostic" features : the style and maintenance of housing, traffic congestion, social unrest, and the like, and are able to form hypotheses about problems connected with these features. Only after the age of fourteen the "action space" of students leaps over the boundary of the city quarters they are used to. Certain clichés (called "topoi" by Kreibich) are repeated. These pertain to such aspects as the reconstruction of houses and streets being perceived as environmental molestations; to the various pathological elements in urban society, such as hooliganism and criminality; to supposed wastes in public spending; and to the feeling that adults are not interested in the opinions of children. The extension of the CBD into neighbouring residential areas is seen as a nuisance by those who are affected by it. Institutions and functions are taken into consideration only when they have an immediate bearing on personal interests and needs. In discussing problems with wich they are concerned, students use the first personal pronoun, yet when they consider solutions they revert to an impersonal rendering ("one should do", "they should try...", etc.). Students over the age of fourteen strive to translate their problems into the broader context, and even attempt to simulate the position planners find themselves in when trying to find solutions as fair as possible in the circumstances; they strive towards a greater objectivity. KREIBICH concludes that geography lessons should start from the daily life experiences of the pupils, then proceed to the problems underlying them, including social backgrounds. Lessons should try to break down the notion that children`s views are not of interest (see also HARD (1981)).

According to BRAUN (1983, 1984) students in standard 10 show a definite interest in environmental problems only when they are directly concerned, or where they can be stimulated by visits to exhibitions or by talks of experts. With the help of a questionnaire and a subsequent factor analysis, Braun was able to define the critical affective variables: environmental consciousness; earnestness; deep concern; responsibility; readiness to participate; active participation.

The perception of landscapes and landforms was treated in two research projects undertaken by BIRKENHAUER (1984). In the first, males and females aged between ten and seventy from all over the Federal Republic were asked to judge the "beauty" of landscapes presented on colour photographs. On the basis of the results of the survey the following general points can be made:

1) Evaluation of the landscape is not dependent on its intrinsic aesthetic qualities, but on interests, needs and expectations of what the personal use of the landscape might be in relation to the special opportunities it offers to the viewer.
2) Landscapes in the Alps and the German uplands were preferred, the latter by the older respondents especially.
3) Urban sprawl in semi-rural landscapes was almost universally disliked.
4) The more negative the judgement of particular elements in the photographs was, the more spontaneous judgements were rendered.

In the second project, students were shown four slides of landforms. They were then asked to mark (on overlays of the landscapes shown on the photographs) such places which seemed best suited with regard to seventeen uses. 6000 correct answers helped to discover which landforms are best recognised according to the circumstances represented by the task. As in the first project, landforms were not judged according to some intrinsic quality, but from the individual's experiences and needs, especially residential, travel and leisure experiences. These do not, however, lead to a clearer perception of the configuration of the landforms (see also KOSMELLA (1979)). Functional contexts are scarcely noted (see again Kosmella). Students from rural areas and boys gave more correct answers, perhaps because they were able to draw more directly on experiences appropriate to the tasks. Similarly there were improvements with age. Additionally, pictures with clear and straightforward landform elements enabled students to give more correct answers, ("correctness", of course having been decided on in advance). The following would seem to be guidelines for teachers on the evidence of the survey:

1) Students must be able to identify themselves, through their needs, aspirations and general human interest, in some way with the slides and photographs.
2) Teaching must relate to the basic experiences of youngsters, especially the less able.
3) Elements of physical geography are less familiar to students from an urban milieu. To these, therefore, such elements have to be presented in a particularly vivid way.
4) There is an overall shift from the child`s to the grown-up`s perception of things in a spatial setting, that is from the identification of details within the picture towards the more "gestalt" view of adults. The main shift occurs between Standard 8 and 10. Thus below Standard 10, it is important to move from the particular to the general and not the reverse, as teachers tend to do.

In some ways, the results of HARD`s (1978) survey of university students, to whom he put semantic profiles, can be linked to what has just been said about the predilection for near-natural landscapes:

- landscape: idyll, beauty, nature, heart, soul, mood, longing;

- geographical landscape: mind, work, activity, presence, rural, "whole", unity, organic;
- space: area;
- countryside: see landscape;
- tract: terrain;
- nature: familiarity, heart, soul, mood, longing.

Factor analysis indicated that the following variables were the main onces associated with the concepts above:

- rural idyll: harmony, variety, heart, mood;
- happy life: love, peace, quietude, recreation;
- potentiality: nearness, distinctiveness.

However, these variables altogether explain less than 40% of the total variance. The first two are correlated with each other, if only slightly. The third is nearly independent.

f) Number 11: The affective domain: student`s attitudes, motivations and perception of the subject

The attitudes of the students to geography as a school subject was the subject of a number of researchers. LEUSSMANN (1979), for example, concluded that the attention of pupils is not gained by the subject matter as such and its structuring but rather how the teacher is able to inspire them. Nevertheless, another investigation by the same author (LEUSSMANN, 1976a) suggested that structuring plays some role and that students are aware of it. Asked to appraise certain items of geographical subject matter, students showed a preference for logical clarity, usefulness, and topicality. Basic physical elements came last.

In order to find out which formal elements in a geographical subject matter make it attractive to students LEUSSMANN (1976a) used a matrix introduced by POLLEX (1972). The variables deployed in this matrix were then reduced to two main components with the help of a factor analysis after gathering the material required by means of semantic profiles handed out to students. The two components were explanation and analysis (comprisisng the Pollexian variables development or process, function and problematic content), and synthesis (comprising the variables of survey, type and context). Students were found to rate geographical subject matter as "good" if and when it contained strong elements of "explanation", possessed logical structure, and made mental operations possible, at whatever age. Pollex`s judgement that structure is important was thus reinforced by LEUSSMANN`s results.

Other workers occupied themselves with the attitudes and prejudices of pupils regarding foreign peoples. KROSS (1976) found that students aged thirteen and fourteen have practically no knowledge at all about affaires in Latin America because, in his view, Latin America does not hold a place within the cultural frame of the German people. Students took a greater interest however when seeing photographs of barriadas, ragged children and primitive methods of agriculture. On the basis of remarks jotted down in reaction to the slides, the author concluded that the main motivating force is the image of poverty, a prevailing stereotype concerning developing countries.

WILLIAMS, HAHN et al (1984) enquired of Stuttgart students aged twelve to fourteen their attitudes to other European countries. Generally there were positive attitudes shown towards countries in the EC and negative ones to those in the COMECON. The negative attitudes were clearly based on political factors, though there were also negative suppositions related to climate. The positive responses were also linked with travel opportunities. Pupils in south-western Germany (NEBEL 1984) associated the following with France: a pleasant climate; relaxed ways; haute couture, and good food, views which prevailed throughout the range of Standards 4 to 8. BÖHN (1982) discovered that the Chinese were judged very favourably (diligent, friendly and polite), attitudes presumably gained from the mass media. The student interest was inhanced by the focus of interest in lessons in China being directed towards everyday life (see also BIRKENHAUER 1974).

g) **Number 15: Media**

According to BREITENBACH (1982) pupils in Standard 5 are quite capable of evaluating the relevance and quality of presentation of school TV and radio broadcasts. They are hostile to artificiality, mere gags, anything condescending and appearing as too much designed for children. Instead they prefer exact statements, graphic methods of presentation, concise summaries, people-orientated scenes, with attention to social conflicts. Printed matter supporting the films is appreciated (see also BÜRVENICH 1977). If these preferences are taken into account then children can achieve greater increases in knowledge and understanding than conclusions from the psychology of learning would anticipate.

RAUCH (1976) used a game entitled "Treasure Hunt" in order to investigate students` understanding of maps, from Standards 3 to 8. Understanding of ground-plans was widespread, and students regarded maps as good for orientation and leisure-time use. There were problems associated with the use of contour lines before the age of ten. Rauch suggests a systematic introduction to map reading not before Standard 5. Only 34% of pupils came to understand maps through geographic lessons, as compared to parents (26%) and mass media (25%).

C. Some general guidelines

A number of guidelines for geography teaching emerge from this review. They may be summarised as follows:

1. Issues of practical and topical interest are preferred by teachers and students.
2. The problematic issues of curriculum planning were mostly tried to solve by employing the spatial organisation approach.
3. Particular interest was attached to all kind of geographical material, including the spoken and written word, text-books, TV, radio broadcasts, and other audio-visual aids (which naturally are more accessible and readily coded).
4. Of the greatest importance for geography teaching seem to be the findings that needs, interests, experiences and environments of the children should receive far greater attention. All evidence suggests that wherever learning was successful (in both cognitive and affective terms) the students had become familiar with the topics through contact with either known settings, or within settings which were vividly presented to them. This generalisation applies to upper as well as lower Standards. Teachers and text-book authors are well advised to make full use of these findings as guidelines.

5. Concepts and principles have to be built up carefully, and revisited in changing contexts. Cognitive aspects should be precisely structured, and well - sequenced (in the sense of GEIPEL's "ramp" (1986)). They should be shaped as case studies in which the thematic and regional intent should be combined.
6. Insights regarding functions and processes should also be built up sequentially, already starting in the first Standards, so that students are enabled to handle concepts permanently and securely, applying them in new situations and in response to problem-solving exercises.
7. Maps and plans should be used in a far greater estent for solving functional and spatial problems, and for describing the spatial contexts in which these problems appear. At present students seem not adequately equipped with these skills.
8. Knowledge acquired in geography lessons is not sufficiently connected with everyday life.
9. Even in Standards 3 and 4, pupils are able to grasp basic geographical concepts such as distance and distribution. Up to Standard 4, however, mental activities in which children have to abstract themselves from their own egocentric frames of reference must be rated as extremely difficult; this means that teachers have to select materials with particular care at these levels.
10. From Standards 5 to 10, students develop more complex cognitive skills including greater linguistic competence, ability to handle more abstract rules, ability to generalise and to apply concepts, and so on. An effective teacher of geography should be fully aware of this development.
11. In spite of the variety of studies which have been undertaken within the period of this review, there remain a lot of gaps. These include, for example, ways of developing and refining concepts through connecting students' experiences with questions of cause and effect, function, historical and other contexts, and the like; development of problem-solving skills and other high-level intellectual tasks; balancing systematic and regional approaches to the structuring of curriculum content; the transfer of geographical skills into other

areas of social education; the more active use of maps, atlases and other geographical materials.

Some fields of research have not been included in the summary table and therefore in this account. These include the history of geography teaching and its place in educational thought; the teaching of geography in other countries, i.e. the comparative approach; political aspects of geography teaching, whether between different Länder within the Federal Republic, or between other foreign countries; relation of geography to the methodologies and theories of science; and the teaching of geography at tertiary level.

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Abbreviations and periodicals

Beihefte z.G.R. = Beihefte zur Geographischen Rundschau (Supplements to the Geographical Review)

Der Ek-u. = Der Erdkundeunterricht. (School geography)

Diss. = Dissertation (Doctoral thesis)

G.R. = Geographische Rundschau (Geographical Review)

GS = Geographie und Schule (Geography and school)

GU = Geographie im Unterricht (Teaching Geography)

GuiD = Geographie und ihre Didaktik (Geography and its didactics)

Hefte z. Fachdid. d. Geogr. = Hefte zur Fachdidaktik der Geographie (Note-books on didactics of geography)

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